Lettsomian Lectures

ON

WOUNDS AND OTHER INJURIES IN THEIR MEDICO-LEGAL ASPECT.

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LECTURE I.

As it is, I fear, impossible to deal comprehensively with this subject I propose to give an account of my own experience of the last 20 years, and I have endeavoured to extract from the material at my disposal especially those facts and conclusions which seem to have a general application to medico-legal problems, although I realise the disjointed effect entailed by this method of treatment.

I have collected about 600 cases, grouped for convenience of treatment under headings representing the different varieties of injury.

An apology may be thought necessary for dealing with a subject so elementary, in some of its aspects, as bruises, but medical evidence in these cases is so often based on a misunderstanding of the nature of the processes entailed, that I consider it advisable to apply physiological principles to the problem presented by their formation.

BRUISES.

A contusion, or as it is commonly called, a bruise, is a crushing injury produced either by excessive pressure upon the surface of the body, or by violent contact with an object which is relatively incompressible, and which is of such a form as to produce no gross injury to the surface. The crushing force damages the fat in the skin and subcutaneous tissue rather than the dense fibrous tissue of the cutis vera, tearing the capillaries and veins in the crushed tissue. As soon as the force ceases to act the pressure within the blood-vessels causes blood to issue from the torn ends, and forces it slowly between the elements of the damaged tissue, producing a diffuse infiltration which extends into surrounding parts. Loose cellular connective tissues, muscles and viscera lying beneath the crushed area may be the seat of similar hæmorrhagic infiltration. In parts, such as the eyelids and vulva, where the skin has a loose texture, infiltration of the damaged tissue by blood occurs more readily, and bruising develops rapidly; where the deeper part of the skin is more densely fibrous, and fat is scanty or absent, as in the palm of the hand, greater violence is required to produce a contusion, and the amount of blood effused is small.

When the local application of violence is extreme, the soft tissues beneath the skin may be pulped and completely disorganised, and blood-vessels of larger size, including arteries, are torn across. The resulting hæmorrhage is more rapid and profuse, and instead of infiltrating it pushes aside the crushed tissue to form a cavity filled with blood—a hæmatoma. A very similar effect is produced by a foreign body such as a bullet tearing its way through the tissues; if its progress is arrested by the skin a bruise speedily forms in the subcutaneous tissues around it. It is the causative agent—violence—which differentiates contusions from other conditions of hæmorrhage into the tissues, due to excessive pressure within the blood-vessels, or to disease of the blood-vessels and tissues.

It is unnecessary here to describe the changes which take place in contusions, and the processes of absorption and restitution in the injured areas. If the violence is maintained until death, and for a short time afterwards, there may be no escape of blood from the torn blood-vessels, the only effects of the crushing force being some pitting of the skin, and perhaps slight softening of the damaged area; usually, however, a little blood escapes at the margin of the crushed area and the hæmorrhage becomes more evident if the compressing object alters its position. This explains the slight amount of bruising which may result from the pressure of the fingers of an assailant upon the neck of the victim in a fatal case of throttling, although the violence may have been so great as to have led to the production of hæmorrhage in the loose cellular tissue between the larynx and the spine.

There are persons who bruise very readily as the result of pressure which in others would have no effect. A peculiar fragility of the blood-vessels has been advanced in order to explain this condition, but a more likely explanation is that these persons take insufficient exercise and consume in their food a large amount of fats having a low melting-point, such as butter; as a result the fat deposited in the subcutaneous tissues has a melting-point lower than the average, and at the body temperature the fat would be more fluid and the tissues more easily crushed. A lady who was unable to play tennis owing to the ease with which she bruised and who, during the war, led a more active life, lost the condition. The changes in diet under war conditions may have contributed to this result. The trained athlete can receive fairly severe blows without developing bruises, and the designation "hard" may well be applicable to his skin as well as to his muscles.

A bruise inflicted shortly before death which is not visible on the surface of the body may become apparent a few hours or several days after death. This is due not to any appreciable addition to the blood in the contused area after death, but to a more rapid hæmolysis in the stagnant blood as a part of post-mortem changes; there is no circulation to carry away the pigment, and the tissues are dead and cannot deal with it. The pigment diffuses locally, producing a stain in the surface, dark red at first, but changing sometimes to a bright red colour from absorption of oxygen through the skin; or an area of dark green putrefactive discoloration appears over a deep bruise before the skin around it is changed.

Since the development of a contusion is dependent upon the maintenance of the circulation it follows that as soon as the heart's action is arrested in death the arterial pressure falls, and the circulation slows down and is soon completely arrested. The production of a contusion then becomes impossible.

Observations[1] upon the circulation in the retina at the time of death have shown that the fall of arterial pressure is so rapid that within half a minute of the heart ceasing to beat the blood-stream may be reversed in the arteries, flowing backwards more readily than it passes through the capillaries. This phenomenon is probably peculiar to the eyeball and is accounted for by the ocular tension, but the observations demonstrate the rapidity with which the circulation runs down after death, and render it certain that 5 or 6 minutes after the heart has ceased to function the circulation will be at an end, and the pressure will be the same in the blood-vessels and tissues. Two minutes after death no appreciable bruising occurs and the amount of blood effused, when death follows immediately upon the infliction of the injury, will be slight in comparison with the amount when the injured person survives.

I have seen several cases in which death resulted from the shock of multiple contusions.

In one, a woman about 45 years of age, who had been brutally assaulted and who was found dead in her apartment, six bruises were found on examination of the body; three of these situated on the face and head were of large size and were caused by severe crushing. There were no open wounds upon the body, little blood had been lost, and there was no disease to account for the death.

[1] C. H. Usher: Ophthalmic Review, 1896, xv., 339.

CRUSHING INJURIES OF THE CHEST AND ABDOMEN.

The data upon which this section of the lecture is based have been obtained by analysis of the post-mortem records of 184 cases of this nature. These cases, taken mainly from my hospital records from 1905 onwards, include many street accidents from the time when motor vehicles began to predominate, and they therefore indicate the serious character of the injuries produced by fast and heavy traffic. The injuries were so grave that many were dead or at the point of death on reaching hospital, and in over 40 per cent. the nature of the accident is not recorded: of the remaining 103 cases 60 per cent. were street accidents. Other causes include falls from a height, crushes by falling débris, by railway trains, and in lift accidents, and by severe blows on the chest and abdomen by cart-poles, kicks by horses, &c.

An examination of the results shows that in one-half of the cases no external injury—not even a bruise or the mark of a wheel—was present at death on the surface of the chest or abdomen; in a large proportion death was due solely to injuries of the organs in these regions, and ribs were fractured in 75 per cent. of the cases. Recorded cases of injury of the chest and abdomen include many in which no external injuries were seen, and I was surprised to find that they occurred in so many of the cases in this series.

Crushing Injuries of the Chest.

The *lungs* give the highest figure of all the organs, being lacerated or severely bruised in 104 cases; in most of them the injury was caused by the penetration of fractured ribs, but serious injuries had been produced in several instances by extreme flattening of the chest without fractures in some of the younger subjects; in three of these cases one lung had been completely torn away from its attachments.

In contrast with the lungs, the injuries of the *heart* and great vessels in the chest were found only in 40 cases; this figure corresponds closely with that of fractures of the sternum (42 cases), although the two occur together only 14 times in these records. The injuries of the heart range from bruising to extensive laceration, and in two cases the heart had been completely torn away, and was lying free in one of the pleural cavities.

The *main blood-vessels* were injured in several other cases, rupture of the aorta being found in four.

One of these was in an elderly lady who fell down the steps at a railway station, and who, although severely shaken, was able to return home alone, where she died suddenly an hour afterwards. She was found to have a laceration three-quarters of an inch long through the whole thickness of the aorta, immediately above the valve, where the artery was slightly thinner than the normal; the blood which escaped from the vessel had forced its way slowly through the epicardial fat and into the pericardial cavity at the level of the auriculo-ventricular groove. As in some other cases the laceration strikingly resembled a clean cut in the vessel wall, the only difference being that the tunica adventitia was dissected away by the issuing blood rather than cut.

Crushing Injuries of the Abdomen.

Of the abdominal viscera the *liver* is the organ which is most frequently damaged. Injuries ranging from severe bruising to extreme laceration were found in 84 cases; in several the organ was torn into two halves, or a large piece completely separated. The injuries were as frequent on the left as on the right side, but the more serious were usually in the right lobe, many being situated near the falciform ligament or at the right extremity of the organ. The frequency with which the liver suffers when the abdomen is compressed is due to its large bulk and to its position—lying across the spine, against which it is crushed when the pressure is from the front. In none of the cases was the liver softened by disease, but on two occasions cirrhosis was found.

The *spleen* is next in order of frequency, and it suffered in 46 cases. Situated under the left ribs, it is poorly protected when the abdomen is severely crushed or is struck upon the left side. In none of the cases was there a condition of enlargement of the organ such as accounts for the frequency of rupture in tropical countries.

There are only 30 cases of injury to the *kidneys* in this series; in two only were both organs involved. Their protected position no doubt accounts for the less frequent damage, which occurs chiefly in persons who have been run over, one kidney being crushed against the spine as the wheel mounts the abdomen, the other escaping as the wheel passes off. The direction in which the wheel crosses the body may thus be indicated.

The *stomach*, *duodenum*, and *pancreas* can with advantage be considered together. Owing to their close anatomical relations these organs are likely to suffer in the same class of injury, especially when the compressing force acts over a comparatively small area, as, for example, the pole of a cart crushing these structures against the spine. In other crushes the liver protects these organs to some extent, but the stomach is occasionally lacerated when the abdominal contents are forcibly pressed to one side in those who are run over. Lacerations were found in the stomach in 16 cases, in the duodenum in 12, and in the pancreas in 18 cases. In only one case of pancreatic injury did the patient survive long enough for fat-necrosis to develop.

The *intestines* and *mesentery* are represented in the series by 34 cases, 23 tears in the intestine and 11 in the mesentery. A large proportion of the lacerations in the small intestine are situated at or just below the duodeno-jejunal junction, and their frequency in this area is due probably to the fixed position of this part of the intestine, causing it to be more readily crushed against the spine, or to its being torn when the intestines are pushed bodily over to the right side of the abdomen; several of the wounds had the appearance of tears rather than crushes, the muscular coat being lacerated over a larger area than the mucous membrane. It was noted in a number of these cases that the contents of the intestine had not escaped in appreciable amount into the peritoneal cavity, and it is probable that peristalsis was arrested by the shock resulting from compression of the abdomen.

Lastly, laceration of the *diaphragm* was found in 13 cases in the series, the injury being met with in association with other serious abdominal injuries, the liver having been crushed in almost all of them. In the majority the tear was extensive and in six cases abdominal viscera had passed into the pleural cavity, the stomach and spleen being the organs most commonly found there.

WOUNDS PRODUCED BY PROJECTILES.

Wounds produced by projectiles discharged from firearms present the characters of lacerated wounds, but their appearances are very varied, depending upon the class of weapon, whether modern rifle, shot-gun, or short-barrelled pistol; and in any one of these classes the penetrative power of the projectile and the extent of the damage produced depend upon its weight, shape, and composition, on the length of the barrel of the weapon, and on the amount and nature of the charge. Thus the penetrative power of a bullet fired from a small automatic pistol is far less than that of a larger and longer-barrelled service revolver. I have collected 32 cases of gunshot injuries; most of them occurred in London, and the weapon, at any rate before the war, was generally a small revolver, and was used at short range.

Effects Produced by Passage of Projectiles Through the Tissues.

This class of injury affords an interesting study, both of the effects produced by the passage of projectiles through the tissues, and of the circumstances in which the injuries have been inflicted. If discharged within a short distance of the body there may be surface indications from which the distance of the weapon can be accurately determined, and the path of the projectile through the body enables the exact position of the weapon in relation to the victim to be deter-

mined, and may give valuable information as to the medico-legal significance of the wound. When the projectile penetrates another object after traversing the body it may be possible to reconstruct exactly the circumstances in which the weapon was discharged, whilst the firm grasp of the weapon in the hand of the victim after death gives a clear indication of a self-inflicted injury.

When a weapon is discharged near the body the *external markings* are seen principally upon the skin and clothing around the entrance wound. They vary with the type of cartridge and the nature and amount of the charge and are less distinct when smokeless powder is used. The changes produced by black powder are due to flame when the discharge is very close, to smoke for a rather longer distance, and to unconsumed powder at a still greater range. Flame may singe or set fire to clothing, singeing the hair and slightly burning the skin, with the formation of a glazed, brown, parchment-like area after death. Smoke, when the discharge is fairly close, produces a uniform black deposit, and grains of unconsumed powder expelled from the weapon behind the projectile are carried for a distance possibly of several feet, spreading like small shot, and with such force that they are embedded in the skin and clothing, and produce characteristic tattooing. The pattern produced round an entrance wound in a given case may be reproduced by experiment, using the same weapon and cartridges of the same manufacture; the distance at which the weapon has been discharged may thus be estimated with a fair degree of accuracy.

In cases of self-inflicted injury blackening and splashes of blood may be found upon the hand used to steady the weapon at the muzzle end. The external indications of a near discharge may be absent when the muzzle of the weapon is pressed firmly against the skin, the gases of the discharge, the flame, smoke, and powder grains all following the track of the bullet into the body. In one case there were no external marks excepting a slight blackening of the edge of the wound on the right temple, but the skin was separated from the pericranium round the entrance wound over an area measuring 2 by 1¼ in. There was smoke-blackening of the wall of the cavity and of the outer surface of the dura mater where it had been detached from the skull; along the track of the bullet in the right cerebral hemisphere powder grains were embedded and the track was blackened by smoke. In another case the escaping gases had stripped up the skin, blackening its deep surface, and had produced four splits radiating from the edge of the wound; the exposed surface of the dura mater was also blackened.

Apart from splitting of the skin produced by the gases of the discharge the *wound of entrance* is generally small, circular when the weapon is discharged at right angles, and oval in shape when the bullet has entered obliquely; the margin of the wound may be inverted, though this is by no means constant.

The *wound of exit* is often larger and more irregular, especially when the bullet has passed through bone; this is due to deformation of the bullet or to laceration of the skin by fragments of bone expelled by the projectile. Multiple exit wounds may be so produced—and this is more frequently seen when the projectile is large and travels at high velocity, splintering the bone at some distance from the skin. The skin at the margin of the exit wound is often everted.

Bullet Wounds in the Head.

Suicidal bullet wounds in the head are most frequently found in the temple. I have examined six cases in which the entrance wound was in the right temple, another in which the bullet entered above and behind the right ear, running somewhat forwards—an unusual direction for a suicidal injury—and another where the entrance wound was on the forehead close to the middle line. In every case the bullet passed through the cranial cavity, producing openings in the bone in which the edges were distinctly bevelled as the result of more extensive fracturing of the table on the side on which the bullet emerged; the only exceptions were those in which the skull was so thin that the tables merged into a single compact shell.

In all but one of the cases the skull also showed *bursting effects*, due to the passage of a projectile of high velocity through a closed cavity. The most usual manifestation of this effect was in the orbital plates of the frontal bones and the cribriform plate, which were extensively fractured even when the bullet had not passed near them. Injury of the orbital fat consequent upon these fractures led to the appearance of bruises in the upper eyelids of those who survived for a few hours. Less frequently the roof of the tympanum was fractured. The bursting effect was also shown by the presence of fissured fractures partly encircling the head.

In one case a fracture extended from the entrance wound on the forehead round the right side of the head above the ear to the exit wound in the right occipital region. In another case the bullet had passed across the skull high up and a fracture at a lower level extended horizontally round the head on each side from a point above and behind each ear, traversing in front the anterior ends of the orbital plates. In a third case the entrance wound was above and behind the right ear, and the exit wound immediately above the left ear; three fissured fractures extended from the entrance wound, one running directly backwards and around the back of the head to the left side, a second crossing the top of the head to the exit wound, and a third running forwards and downwards along the right side of the skull, crossing the front ends of both orbital plates. The skull was encircled by fractures in three-quarters of its circumference. An interesting feature in this case was the wide separation up to a quarter of an inch of the fractures; beneath these fractures the brain was marked by lines of superficial bruising where it had been forced into the gaps by increased intracranial pressure.

None of the cases showed such marked bursting effects as have been recorded, where the skull has been smashed into many fragments.

A most remarkable case, and I believe a very rare one, was related to me by a medical friend, who during the retreat from Mons saw a guardsman lying at full length with the top of his skull raised and turned backwards, almost as clean as if it had been sawn through in the post-mortem room, and with the cranial cavity completely empty; the brain, which appeared to be uninjured, was lying a short distance away. He had been struck by a bullet in the middle of the forehead just above the root of the nose.

One suicide fired a revolver below his chin, the bullet passing through the floor of the mouth, the tongue, and the nose, and lodging beneath the skin at the inner end of the eyebrow. The weapon had also been fired into the chest, the bullet traversing the left lung and leading to a fatal result 12 days later from empyema and broncho-pneumonia.

In three cases the weapon was discharged through the roof of the mouth, the bullet passing through the palate; two were clearly suicidal cases, and in one of them two bullets had been fired, one lodging in the antrum of Highmore, the other penetrating the base of the skull and traversing the brain. The third was an example of self-inflicted injury very similar to the last two, but the coroner recorded a verdict of accidental death. A young man was found lying on his back on the floor of his bedroom, dead, the sound of the discharge of a firearm having been heard a few minutes previously. He lay opposite a looking-glass, his left hand was in his pocket, and the revolver containing one empty cartridge case was found in a closed drawer. He had shot himself through the roof of the mouth, the bullet passing through the hard palate in the middle line and vertically upwards, smashing the nasal septum and the cribriform plate, passing through the cranial cavity between the frontal lobes; the bullet was embedded in the fractured vault at the end of the track, the only injury of the brain being a linear bruise on the mesial aspect of each frontal lobe along the course taken by the bullet. The mucous membrane of the palate was blackened by smoke behind the wound. The front of the chin had been injured, probably by the kick of the revolver, and the lips were bruised and slightly lacerated from the sudden escape of gases at the moment of discharge. Asphyxia was the cause of death, blood having run from the nose into the air passages as he lay unconscious.

This was more probably a suicidal act, though it is just possible that he was imitating a suicide, not suspecting that the revolver was loaded. From the slight amount of injury of the brain by the bullet it is possible that he retained consciousness long enough to

enable him to place the revolver in the drawer, at some distance from the spot where he was found, and to close the drawer afterwards.

A Reconstruction of a Murder.

The best example in my experience of the reconstruction of a murder was that of a soldier in camp at Aldershot, who was found dead in a hut at night, shortly after the sound of a shot had been heard. The other occupant of the hut, a soldier, was afterwards charged with murder. The death was at first thought to be a suicide, the coroner was informed; an inquest was held without a post-mortem examination and a verdict of suicide was recorded, the body then being buried. Several suspicious circumstances, however, led to the arrest of the other occupant of the hut, and at the time of my investigation he was awaiting his trial at the assizes.

When he was discovered the dead man was lying on his back, covered with bed-clothes up to the chest, and clothed in underwear and socks; his face, turned to the right, was at the edge of the bed. There was a bullet wound on the left cheek immediately below the malar bone which was not fractured, and the characters of the wound and the changes around it were carefully noted by the medical officer. On turning the head the exit wound was found immediately behind the right mastoid process. The weapon, a service rifle, was on the floor close to the bed and between the outstretched arms of the dead man, but was not grasped, nor were the hands blackened. The cartridge was a Mark 303. After leaving the head the bullet traversed the bedding and a pillow consisting of a bag containing uniform, and an examination of these showed that no metal or other hard object had been struck; the bullet had then passed through the wall of the hut, constructed of two layers of three-ply wood with a space between. In this part of its course the trajectory formed an angle of 35° with the horizontal; it had undergone no deflection in its passage through the wall, and a furrow produced by its striking the path outside was in the same line.

On plotting out upon a skull the line joining the entrance and exit wounds it was found to cross the central nervous system at the junction of brain and spinal cord; the passage of the bullet must have resulted in instant paralysis, and probably instant death. To bring the track of the bullet through the head into line with the track in the wall the head must have been resting on the pillow in a half lateral position when the weapon was fired, and must have rolled completely to the right immediately afterwards. The weapon must have been pointed in a downward direction at an angle of 35°.

To ascertain its distance from the head experiments were made with the weapon, using cartridges of the same pattern, and the blackening seen around the wound in the cheek was found to correspond with a muzzle distance of more than 2 in., and probably about 5 in. The weapon was 3½ ft. long from muzzle to trigger. The dead man was 5 ft. 7½ in. in height; and it was impossible for a man of that height to have touched the trigger with his finger, with the muzzle 2 in. from his cheek, when lying in bed. The weapon could not have been discharged by his foot, as paralysis would have prevented him from replacing his foot beneath the bed-clothes after the weapon was discharged. The wound, therefore, could not have been self-inflicted, and the prisoner was the only other person who was in the hut at the time. He was found guilty.

Bullet Wound of the Abdomen.

The only bullet wound of the abdomen in my series was a suicidal injury by a middle-aged woman who shot herself with a revolver, the entrance wound being 1½ in. below the ensiform cartilage.

The weapon had probably been pressed against the abdominal wall, the skin around the bullet wound being scorched, but not blackened or tattooed. Both these changes, however, were found on dissection upon the front surface of the anterior sheath of the rectus muscle, which had been separated from the superficial tissues for some distance round the track. The bullet passed directly backwards and was found beneath the skin in the middle line of the back at the same level; it had passed through the left lobe of the liver and the upper part of the stomach close to the pylorus, producing only one opening in the mucous membrane; these wounds had been sewn up. The bullet then passed through the head of the pancreas, dividing the pancreatic duct, between the abdominal aorta and the vena cava, without injuring either vessel; it then traversed the body of the first lumbar vertebra, crossing the spinal canal without injuring the cord or its membranes.

This is a good example of the passing of a bullet between yielding structures such as blood-vessels without injury.

Bullet Wounds of the Chest.

In every case in the series of suicidal wounds of the chest the entrance wound was situated in the upper part of the front of the left chest in the area between the sternum and the vertical nipple line. The weapon in several of the cases was fired through the clothing, suicidal injuries by firearms differing in this respect from incised wounds and stabs. In these cases the bullet passed directly backwards, deviating but little from the horizontal, and only slightly to one side or the other; the left lung, the heart, the aorta, and the pulmonary artery being damaged by bullets.

One suicidal injury was produced by a shot-gun. The entrance wound was a single opening, circular, and only slightly larger than those produced by a bullet, with a ring of blackening around its margin, but a large hole had been blown in the chest wall, three ribs were smashed, one comminuted, and the heart wall, excepting the right auricle, was torn and the muscle was in strips; the descending thoracic aorta was shredded for a distance of about 3 in. None of the pellets had left the body. This injury was quite unlike a bullet wound when its course in the chest was examined.

Homicide by Firearms.

In cases of homicide by firearms multiple injuries are more frequent than in suicides. If an injury in a vital area is associated with one in the hand or arm it is a strong presumption of homicide. The two injuries may have been caused by one bullet, the arm having been raised to cover the body, and in such a case the arm can be placed in a position so that the two wounds come into the same line. Injuries in the limbs may be produced by the rapid emptying of a revolver, some of the bullets missing their main objective. An injury such as one passing through the calf of the leg from behind, forwards and downwards, associated with a wound in a vital area is strong evidence in favour of homicide.

In homicidal cases the distinction of wounds of entry and of exit is often a matter of considerable difficulty, especially when the weapon is a service revolver or a modern rifle. Discharged at a range of more than five or six feet from the body, there will probably be no mark on the clothing or skin around the wound to indicate the wound of entry, and in size and shape the two wounds may be very similar, especially with the more pointed type of bullet, though the exit wound tends to be more slit-like, and the entrance wound circular. It may be impossible by examination of the injuries to say in which direction a bullet has traversed the body, but when an examination is made before the body is moved, or the clothing disturbed, a bullet may be found lodged against a metal object in the clothing, such as a watch or spectacle case, lying between that object and the exit wound on the body. I have had cases in which valuable information has been lost by failure to search for bullets in the clothing when the body was first inspected, the bullets afterwards falling from the clothing during removal, or during the stripping of the body for post-mortem examination. Homicidal bullet wounds in the chest are only situated in the area usual in suicides in a small proportion of cases.

In one case a husband shot his wife with a service revolver when he was in bed with her. The wound both in position and direction through the chest was indistinguishable from a suicidal injury.

In another case a bullet had entered within the suicidal area, passing backwards and slightly to the right, opening the arch of the aorta; another wound below and to the outside of this one had passed very obliquely across the chest, from left to right and slightly backwards, traversing the apex of the heart, opening the left ventricle, and passing through the right lung. A wound in the left upper arm could be brought into line with this injury. Another bullet had passed through the neck from before backwards, another through the head, from forehead to occiput, completely destroying the upper part of the pons, whilst yet another through the right forearm could not be placed in line with any

of the other injuries. This man had therefore been struck by at least five bullets, and apart from the distinctive characters of the wounds on the arms the three vital injuries through the heart, aorta, and brain placed its homicidal causation beyond doubt.

In other cases of homicidal chest injury the site of the entrance wound and the direction taken by the bullet were such as to make it very difficult, if not impossible, for the injury to have been self-inflicted.

In one case the bullet entered the upper part of the front of the left chest and ran very obliquely downwards and to the right at an angle of 45°, traversing the left lung and the descending thoracic aorta.

In another case where the entrance wound was on the upper part of the front of the right chest wall the wound ran so obliquely to the left that it could have been self-inflicted only with difficulty with the weapon, a revolver, held in the right hand, whilst another wound passing through the inner part of the right upper arm could only have been self-inflicted with the left hand. In this case the victim was in bed when the shots were fired, and several other bullets fired at the same time were embedded in two adjacent walls. The trajectory of these bullets, judged by their tracks in the wall, showed that they had all been fired from a position in the centre of the room about 4 feet from the bed, and they could not all have been fired by the person in bed. The absence of tattooing and blackening on the pyjama suit and on the skin around the entrance wounds also established that the weapon had been discharged more than 3 feet away.

In another case the bullet entered high up in the right axilla, smashing the fourth rib, crossing the right lung at its root, passing through the descending thoracic aorta, and traversing both lobes of the left lung. Fragments of bone from the smashed right rib had been carried through the right lung and aorta, and were deposited in the track of the bullet in the left lung. The bullet had then smashed the left fifth rib and left the body at the back of the left shoulder, where there were three small wounds close together, one produced by the bullet and the other two by fragments of bone.

In another case in which the victim was shot whilst entering his house, two persons were charged with murder, each being in possession of a revolver. The assailants stood some distance away and on opposite sides of the house, and the question might have been raised at the trial whether the fatal injuries might have been caused by one only of the assailants. Five bullet wounds were found in different parts of the body, one of which had entered the left axilla, crossed the upper part of both lungs, and was found embedded in the head of the right humerus, and a second bullet entered in the right axilla, traversed both lungs at a slightly lower level, and was found lodged in the left axilla. These two fatal injuries were inflicted from opposite sides, and both assailants were equally implicated in the death.

Another homicidal injury afforded a proof of the ease with which a bullet may have its course in the body altered.

A woman was shot from above as she ran downstairs, two bullets passing through her chest. One of these entered on the front of the left shoulder, where slight scorching and blackening and a little tattooing of the surrounding skin showed that the weapon had been fired at short range. The bullet passed downwards and to the right, just missing the anterior border of the left lung, ploughing a furrow across the front of the heart, which opened into the right ventricle; the bullet then penetrated the right chest wall and was found under the skin. The penetrative power of this bullet was insufficient to carry it completely through the body, although it had struck no bone in its course. The second bullet entered the front of the right chest immediately internal to the nipple; there were no marks on the skin around, and this injury was probably inflicted after the other. The bullet passed downwards and somewhat inwards, and struck the upper border of the fifth right costal cartilage. The cartilage had been crushed and softened at the point of impact. From this point the bullet had rebounded very much like a billiard ball from the cushion, and its course was then upwards, backwards, and to the left, bruising the anterior border of the right lung, traversing both ventricles of the heart, and crossing the upper lobe of the left lung, to leave the body at the back of the left shoulder. The two bullets, although their direction when they entered the body was at right angles to one another, had taken such closely parallel courses in the chest as to render it a difficult matter to follow their separate courses. The assailant then shot himself with the same weapon, which was a short-barrelled revolver of small bore.

One other case is an example of an unusual complication of a bullet wound in the lung.

A girl was shot in the street, the bullet entering at the back of the left chest 1¼ in. from the middle line. It traversed the left lung, passing through both lobes. She was admitted into hospital in a state of collapse; a large quantity of blood was removed from the left pleural cavity, but she died 24 hours after admission. At the post-mortem examination another collection of blood was present in the pleural cavity; in the lower third of the ileum there were six areas of early gangrene of the bowel wall with peritonitis over them; nothing was found locally to account for the gangrene. On opening the heart, however, the left auricle contained a clot spherical in shape and about the size of a marble, which was unattached and floated when placed in water. When it was incised it consisted of a thin layer of blood-clot enclosing a cavity filled with air. The air had reached the auricle from the wound in the lung, and the gangrene of the intestine was presumably the result of air embolism.

Finally, only two of my cases of bullet wounds were undoubted accidents.

In one of these a man was shot by a friend who was examining a revolver, not knowing it was loaded. The bullet entered the neck in front, immediately to the right of the larynx, crossed the œsophagus, and passed through the body of the sixth cervical vertebra and through the spinal cord. The victim fell to the ground and was found to be paralysed, dying some hours later.

In the other case a trooper was shot by a comrade whom he was teaching to fire a Colt's revolver, the weapon being presumed to be unloaded. The bullet had entered the front of the left chest in the area common in suicidal cases, and had taken a course somewhat similar to that of suicidal injuries, backwards and somewhat to the right. It passed through the right ventricle, aorta, and left auricle, in addition to the two lungs. Unconsciousness supervened in a few seconds.

RUPTURE AND AVULSION OF THE UTERUS AT THE TIME OF LABOUR.

CASES WHICH RECOVERED WITHOUT OPERATION.

BY HERBERT R. SPENCER, M.D., B.S., F.R.C.P. LOND.,

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RUPTURE and avulsion of the uterus at the time of labour is a very rare accident. A recent case of the kind in which the medical man in attendance was convicted of manslaughter—the conviction being happily quashed by the Court of Appeal—raises questions of great importance and concern to medical men who practise midwifery, and especially those who are called in by midwives, as regards their responsibility for the rupture, for the avulsion, and for the subsequent treatment.

With regard to the rupture it is well known to obstetricians that the uterus or vagina may rupture spontaneously even in cases with normal pelves and apparently normal tissues. (I have seen two cases.) The vagina is a fragile tube which I have known to be ruptured in four cases during the act of coitus. The uterine (or vaginal) laceration, once started, is very easily extended; this may be demonstrated during Cæsarean section, where, as in certain cases of fibroids or cancer, it is necessary to remove the uterus. The safest way to deliver the child in such cases, particularly if the membranes are ruptured, is to make a small hole and tear the uterus open. This is done rapidly and with surprising ease by two flips of the forefingers, so to speak. Version in cases of shoulder presentation and the use of forceps before the cervix is sufficiently dilated are two of the commoner causes of these ruptures, which often extend so as to separate the bladder and tear the ligaments. In such cases the avulsion of the uterus would not require much force.

With regard to the mistaking of the edge of the rupture in the uterus for the edge of the placenta, the late Dr. Galabin, one of the most experienced and skilful of British obstetricians, has recorded a case where he temporarily made this mistake.[1]

[1] Obs. Soc. Trans., vol. xx., 299.

With regard to treatment, the patient with rupture of the uterus is usually suffering severely from shock and hæmorrhage; in cases of avulsion of the uterus probably always so. In such cases, to move the patient would be almost certainly fatal. No operation is required to restore the pelvic floor. Removing clots from the vagina, washing out the abdomen with salt solution, and the application of a pack of iodoform gauze to be left in situ for a few days would seem to be the best local treatment for these terrible cases. I have successfully applied it in two cases of complete rupture of the uterus.[2] That patients kept absolutely at rest, without operation, can recover after avulsion of the uterus is shown by the following records.

The first account of this occurrence which I have been able to find is that published by Wrisberg in 1800. The case is admirably described in detail with the name of the doctor (Hepe) who called Wrisberg into consultation, of the midwife (Rippel), and the patient (Ude), who lived in Reyhershausen. The account is in Latin, and as it has features of interest in connexion with the recent occurrence of the same kind in this country, a brief translation may be given.

Wrisberg's Case ("Commentationes," 1800, vol. i., p. 435).—The patient, a primipara, aged 24, felt the first pains of labour at 7 o'clock in the morning of June 5th, 1780. Her pregnancy had run its proper course without any symptoms except sadness at the absence of her husband, who was then fighting with the Hessian forces in America.[3] The pains gradually became stronger and more effective, and between 2 and 3 o'clock in the afternoon, after a perfectly natural labour, the patient brought into the world a living well-made girl.

Having placed the infant in its cot, the midwife returned to the patient, and when asked to loosen and extract the after-birth she tortured the patient with such vigorous, zealous, and repeated manipulations (introducing her arm into the uterus) that the patient fainted, and when she saw a large mass of flesh hanging from the vulva she was only able to pronounce the words "Oh! you're tearing everything out of my body," and felt she would surely die. So severe was the pain that she cried out, and there is no doubt (says Dr. Hepe) that the midwife then cut away the inverted uterus, which, with the placenta which she had peeled off, she placed in a vessel and shortly afterwards buried.

The woman lay for two days without any care or treatment directed either towards stopping the bleeding or saving and comforting the patient, who was abandoned to the "beneficent and curative efforts of Nature." The very severe flow of blood which followed the amputation of the womb and ran down like a torrent into the room spontaneously ceased under the influence of the profound fainting, which so affected the poor woman that she seemed almost dead. Two days later, on June 7th, she asked in a very feeble voice that Dr. Hepe should be called in, who found the patient in the following condition:—

The colour of the face was very pale, just like that of a dead woman; the extremities—the brow, nose, ears, hands, and feet—were cold to the touch; the countenance that of a dying woman, the eyes dull and heavy; the voice very weak, scarcely perceptible. The pulse was almost absent and could only be felt in the large arteries; the respiration short and shallow, and the movement of the thorax scarcely to be felt. Up to this time (the second day) the patient had neither desired nor taken any food. Wrisberg was called in consultation and saw the patient on June 8th (the third day). He removed clots, mucus, and pus from the vagina and found that the gap at the top of the vagina was almost closed by the full bladder. Having passed a catheter he was able to examine more thoroughly. Scybala could be felt in the rectum, and in the gap at the top of the vagina (which had contracted to the size of the diameter of the thumb) he felt a softish, slippery body, which he took for a coil of intestine. "It goes without saying," he writes, "that I was very cautious lest, moved by much curiosity, I should pass my finger too high and hinder the effort of Nature to close the gap, or by too much irritation and handling of the vessels should cause a return of the hæmorrhage." He was able to observe that the canal of the vagina became narrowed like a funnel towards the gap. There was an unpleasant odour like that of gangrene from the vaginal discharge.

Wrisberg prescribed "Summa corporis animique quies"; a moistened sponge was inserted into the vagina to prevent prolapse of the intestines, suitable injections (justæ injectiones) were ordered to wash away the discharge, and mineral acids were administered. On June 16th the patient was able to get out of bed and walk about, and later was shown by Wrisberg with her baby and the uterus to his obstetric colleagues. She made a complete recovery, and on the return of her husband from America she resumed conjugal relations, but stated "Se non amplius voluptatis sensum percipere quem alias percepit."

Bernhard's Case (v. Siebold's "Lucina," vol. i., p. 401).—In this case inversion of the uterus was caused by a forcible removal of the placenta by a midwife who mistook the uterus for a tumour and cut it away with a razor. Ice was inserted into the vagina to stop the bleeding. The patient fainted. There is no mention of a tampon being inserted. The patient recovered "simply by rest and milk diet, without any medicine." When examined later by Bernhard a rectocele was found. The vagina had healed. The patient looked well.

Breslau's Case ("De totius uteri exstirpatione," Inaug. Diss., Munich, 1852).—The patient was 39 years of age, strong and healthy. She had had two children previously, one of which was born dead, apparently as a result of a fall. On Jan. 9th, 1850, at 1.30 P.M., she was delivered of a living well-developed girl. She was attended by a midwife. The labour only lasted an hour and a half. The placenta remained in the uterus, but there was no bleeding. The midwife endeavoured to remove the placenta by introducing her right hand into the uterus and by pulling with the left hand on the cord, which broke. In spite of all her endeavours she was unable to remove the placenta, and at 7 P.M., telling the friends to send for a doctor, she left the patient and went off to another case. The doctor arrived at 9 P.M. and found the patient pale, with cold extremities and small pulse, clots in the vagina, and copious hæmorrhage still going on. The doctor removed the clots, passed his left hand into the vagina, felt the torn end of the cord high up, and some membranes. Using these as a guide, he passed his hand (as he thought) into the uterus, made a couple of "supination movements" to get the hand behind the "placenta," and felt a large body around which he could move his hand without feeling any adhesions to speak of. On account of its size he was in doubt whether this was the placenta, and thinking it was a mole which could not pass, he seized it in the hollow of his hand and, pressing from above (with the other hand), he separated a few adhesions with his finger and nail, and delivered it. To his surprise he found it was the uterus (with its appendages) attached only to the vagina at a few points, which he severed. Overcome with despair, he left the patient to her fate. Next day she was seen by another doctor who prescribed medicine, strict diet, and rest. She gradually recovered, though a fæcal fistula persisted for six months, but finally closed.

The doctor stated that he had removed the uterus without using any force ("ganz ohne Gewalt"). He was punished with some months of imprisonment and suspension from practice. The midwife received no punishment, although "she had probably already prepared the best way" for the removal of the uterus.

Nieprasch's Case (*Berliner klin. Wochensch.*, 1880, p. 388).—The case was that of a woman, aged 29, with

[1] Ibid., vol. xlii., 14.

[2] In the War of Independence. The capture of a Hessian detachment at Trenton in December, 1776, is said to have been the turning point of the war (Chambers's Encycl.).

a normal pelvis, the mother of seven children, three of whom had been delivered with the aid of the doctor owing to abnormal presentations. In the labour at which the rupture occurred the child also presented abnormally (by the feet). Severe hæmorrhage occurred and signs of extreme anæmia. The uterus (with the head in it) had been torn away by the midwife and lay in the bed, held only by one round ligament. The patient was seen by the doctor two hours after the delivery. Small intestines had prolapsed; these were replaced and a sponge was inserted into the vagina. The patient recovered.

Credé's Case.—No particulars are given; the only record being the statement by Nieprasch that "Prof. Credé had told him of a similar case."

E. Schwarz's Case (*Archiv für. Gyn.*, 1880, p. 107).—The patient, aged 29, had had eight children (two born dead in head presentation) and was delivered easily and quickly of her ninth child, a feeble girl, which presented by the head and was born alive. The cord had been pulled upon by the midwife and broke. The placenta was removed by hand. As the midwife thought a piece had been left behind she introduced her hand a second time, when she felt what she thought was a tumour, which she tore away. The doctor who was called also thought it was a tumour till he found it was hollow and had the adnexa upon it. The bleeding had stopped. Clots and intestines were felt in the upper part of the vagina. The clots were removed and a tampon of clean linen inserted into the vagina. Absolute rest and wine and salicylic acid were ordered. The recovery was complete. The midwife was fined and deprived of her licence.

J. C. Cooke's Case (THE LANCET, Jan. 16th, 1836).—The patient, an Irishwoman, was delivered by a midwife in the knee-elbow position after a very painful labour lasting 48 hours. The placenta followed naturally. Free hæmorrhage and strong after-pains ensued, and during micturition the uterus appeared to have become inverted, with increase of the bleeding and the pains. On being called to the patient 36 hours later the midwife found a mass as large as a child's head lying between the patient's thighs, loosely connected to the vagina by a shred of membrane only. It was removed without effort and placed in a bowl. The hæmorrhage then ceased. The doctor, on examination, found the mass removed was the inverted uterus. No internal examination was made. Perfect quietude, absolute rest in the horizontal position, and a light farinaceous diet were ordered. No active medicine was given. The patient made a good recovery.

CANCER AND HEREDITY.

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IT has often been asserted that cancer is not an hereditary disease, and this statement is probably correct; indeed, we know of very few hereditary diseases, but it does not follow that a predisposition to cancer may not be transmissible by heredity. Anyone who has taken the trouble to study Miss Maud Slye's work on natural cancer in mice[1] must have been struck by the very remarkable results which she has brought forward. These certainly seem to show that there are definite predisposing causes transmitted by heredity which tend to cause mice to die from cancer in succeeding generations.

The relationship between heredity and disease is one of the most interesting, and at the same time one of the most difficult problems of modern medicine. The causes at work are very obscure, and the laws governing heredity are but imperfectly understood, though no one can doubt that hereditary predisposition to disease is a most important factor; indeed, it is so recognised by the insurance companies. The study of heredity in human beings is beset with difficulties which are almost insuperable. Human life being relatively long, and in any case being much the same as that of the person who desires to trace it, the latter is obliged to rely upon records. Three generations cover a period of nearly 100 years, and there are seldom accurate or reliable figures available even as far back as this. Now three generations are not enough; at least ten generations are, as a rule, required to establish an hereditary factor with any degree of accuracy. The following facts, therefore, are offered for what they are worth, and although I should be far from wishing to maintain that they prove anything, I think they suggest a very important addition to our knowledge of the ætiology of cancer.

[1] Jour. of Cancer Research, April, 1922, vol. vii., No. 2.

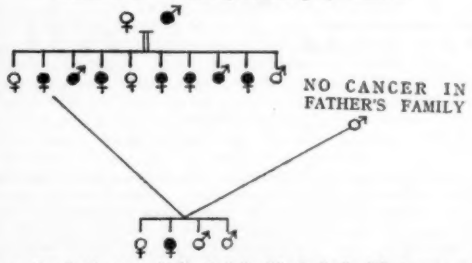
Clinical and Family Records.

CASE 1.—A young woman, aged 31, came into my ward at St. Mark's Hospital with multiple polypi of the colon. Examination showed that she had a vast number of simple adenomatous polypi throughout the visible part of the rectum and colon, when examined with the sigmoidoscope. I removed her colon, as the only feasible means of relieving her, and she made a good recovery. The colon removed was found to be studded with adenomata as far as the ascending colon.

I was already aware that this condition of multiple adenomata was invariably antecedent to carcinoma, one or more of the adenomata sooner or later undergoing malignant change. I also knew that the condition of multiple adenomata is often hereditary in a marked degree, and with this in view I asked my house surgeon, Mr. J. C. Anderson, to make careful inquiries into this patient's family history, and as a result the following extraordinary family history was obtained.

The patient is one of a family of four, and on her mother's side had nine uncles and aunts. Seven of these, including her mother, have died of cancer of the bowel at ages between

CHART 1.—*Family History of Case 1.*



In each chart cases indicated in black had either cancer or multiple adenomatosis of the bowel, or both.

30 and 54, and her maternal grandfather also died of cancer of the bowel. In order to verify this remarkable history I wrote to the doctors said to have been attending these relatives, or to the registrars of the districts where they were supposed to have died. Although I was not able to trace all, which one could hardly expect since they were much scattered and have died over a period of 20 years, I was able to trace several, and to find confirmatory evidence of their having died of cancer of the bowel. Also another relative, one of the cousins of my patient, subsequently consulted me and was able to confirm the facts as I already had them. I was also able to confirm the fact that the grandfather died of cancer of the rectum. As far as such things can be verified, therefore, the facts as given by the patient as to her family history are correct.

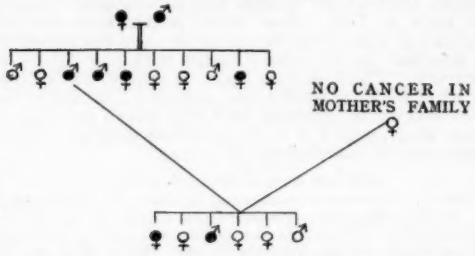
Several facts are noticeable. The large proportion of individuals in a single family that have died of cancer of the bowel is remarkable, also the comparatively early age at which they developed the disease, no less than seven having died between the ages of 27 and 54. Although it cannot be proved, I have very little doubt that all these persons inherited the tendency to the development of multiple adenomata of the large bowel, and that the cancer which caused their death was a secondary process.

I next started to inquire more closely into the family history of two other patients, whom I had had under my care with the same condition, with the result that the following histories were obtained.

CASE 2.—The patient was a young woman, aged 22, who came to the hospital with a history of diarrhœa and bleeding of two and a half years' standing. Examination revealed an

extreme degree of multiple adenomatosis of the entire large bowel. I performed a complete colectomy, and subsequently removed the adenomata in her rectum. She has been kept under observation for the last four years, and on two occasions has had adenomata which had recurred removed.

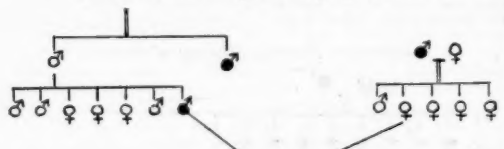
CHART 2.—*Family History of Case 2.*



The brother of this patient was treated in St. Mark's Hospital for multiple adenomata of the rectum and colon in 1913, and he died from cancer of the rectum in another hospital in 1919 at the age of 36. The patient's father died from cancer of the sigmoid flexure in St. Bartholomew's Hospital, and several of his brothers and sisters are said to have died from cancer of the bowel. Both the grandfather and grandmother are said to have died from cancer of the bowel.

CASE 3.—The patient is a girl, aged 20, and is now under my care at St. Mark's Hospital with multiple adenomatosis of the large bowel. Her brother also has multiple adenomatosis and has been under my observation since he was 11 years

CHART 3.—*Family History of Case 3.*



old; he is now 26. Numerous polypi have been removed from his bowel on different occasions. This patient's father died from cancer of the rectum in St. Mark's Hospital in 1922 at the age of 46. The grandfather's brother died of cancer of the rectum, and the grandfather on the mother's side died of cancer of the throat at the age of 50.

It is noticeable that in both these cases also there is evidence of the condition being markedly hereditary, and that the deaths have always been from cancer of the large bowel. In the case of the brother of Case 2, he was in St. Mark's Hospital with multiple polypi in 1913, and died from cancer of the rectum in another hospital six years later. In this case the actual proof exists that the patient had multiple adenomata and died of cancer. Multiple adenomatosis of the large bowel is admittedly a rare disease, but it is often by the study of extreme cases that one is best able to throw light on the more common condition.

Tendency of Adenomata to Malignant Change.

The conclusion which, it seems to me, can be drawn from these cases is that cancer of a particular part of the alimentary tract may cause the death of a large proportion of the members of one family in succeeding generations, the hereditary factor being not cancer itself, but simple tumours (multiple adenomata) having a marked tendency to undergo malignant change. This conclusion, if correct—and it would seem to be justified by these three family histories—is of considerable importance. We have for some time known that a simple adenoma of the rectum is often the forerunner of a cancerous growth. A simple adenoma has a marked tendency in time to undergo malignant change which eventually involves the whole tumour. I have on several occasions seen this occur. A few years ago I removed a simple adenoma from the anterior wall of a patient's rectum and warned him of the necessity of being kept under observation. This, however, he neglected to do, and I did not see him again for a little over a year. I then found he had a typical carcinoma in the position of the scar, where I had removed the adenoma. Further, a careful examination of specimens of cancer of the rectum show that in quite a number, part of the tumour is a simple non-malignant adenoma, though the remainder may be typical adeno-carcinoma, and, still further, that simple adenomata are frequently to be found growing from the mucous membrane of the bowel either above or below the position of a cancerous tumour. There is no doubt that while some adenomata remain innocent tumours for long periods—I have had some under observation for periods as long as seven years—others undergo malignant change very quickly. In cases of multiple adenomata the tendency to undergo malignant change is so pronounced that I have never known a patient with this condition who did not develop cancer. One cannot help wondering what proportion of cancers of the rectum and colon start as simple adenomata, and even whether it may not be possible that in all cases a simple adenoma is the starting-point of a cancerous growth.

Sir Lenthal Cheatle has demonstrated that duct cancer of the breast is often preceded by multiple duct adenoma, so that we have evidence of a similar sequence of events in the case of breast cancer.[2]

The Hereditary Predisposing Factor.

The hereditary factor of cancer would from this limited investigation appear to be quite indirect. Although at first sight the history in these three families would seem to prove that cancer of the bowel had been transmitted, such is almost certainly not the case; another factor has been transmitted by heredity which has predisposed the descendants to the development of cancer. Tubercle from a study of family history alone would appear to be an hereditary disease, but we know it is not. It is some predisposing factor which is hereditary in the case of tubercle, and the same is probably true of cancer.

Miss Maud Slye has shown in respect of mice that a predisposition to develop cancer is definitely hereditary in these rodents. That mice bred from cancer mice will tend to develop cancer, and further, that they will tend to develop cancer of the same organ as the ancestors. She has further shown that the predisposition to develop cancer is recessive, and that the tendency not to develop cancer is dominant. So that by breeding a strain of non-cancer mice to a strain of cancer mice the development of cancer in the succeeding generation can be held off for as much as nine generations, but will show itself as soon as two heterozygous mice are bred together.

We have got to ascertain what the predisposing factors are in mice. I think the facts here produced point to one of the predisposing hereditary factors of cancer of the rectum in human beings. Even though multiple adenomatosis is a rare condition, it would appear to be of importance and well worth further investigation. Like all investigations into the causes of cancer this, while it possibly proves one more link in the chain of our knowledge, only leaves us with fresh questions requiring an answer.

Questions for Solution.

What is the nature of the transition from a simple to a malignant tumour of the mucous membrane, and what are the factors causing it? This we are now attempting to investigate in the research department of St. Mark's Hospital. A much more important question is: What are the causes of the development of simple adenomatous tumours? For an adenoma is in its way just as abnormal a development on normal mucous membrane as is adeno-carcinoma. It would seem that research into the origin of simple epithelial tumours might be more fruitful of result than the investigation of malignant tumours themselves, and

[2] Brit. Jour. Surg., 1923, vol. x., No. 40; also Brit. Med. Jour., April 12th, 1924.

this is certainly a branch of research which has been neglected.

Conclusion.

1. Adenomatosis of the large bowel is a condition which tends to develop in succeeding generations in the same family.
2. Individuals with multiple adenomata of the large bowel almost invariably develop cancer in one or more of the adenomata after a few years.
3. The members of families with an hereditary tendency to multiple adenomata tend to die of cancer of the large bowel, and at an early age.
4. Simple adenomata of the large bowel are a common antecedent of cancer.

THE ORAL ADMINISTRATION OF LARGE QUANTITIES OF GLUCOSE,

AND ITS THERAPEUTIC USES.

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THE primary object of this inquiry was to determine the therapeutic value of glucose administered orally. Impressed by the physical transformation often produced in severe cases of diabetes mellitus when treated with insulin, it seemed to us probable that a somewhat equivalent improvement in nutrition should be obtainable in many non-diabetic patients suffering from diseases associated with wasting, provided that either (*a*) glucose could be administered in really large quantities, without marked loss in the urine, or (*b*) this glucose administration was accompanied by insulin administration.

Method of Preparing Glucose for Administration.

Pure glucose, whether crystalline or anhydrous, is expensive, costing about 8*s.* 6*d.* per lb. It is little used save in chemical laboratories. There is on the market a preparation known as "glucose B.P.," hereinafter referred to as "commercial glucose," which can readily be obtained in jars containing 1 lb. or more at a cost of about 6*d.* per lb. On account of its cheapness, this is clearly the best preparation readily available for clinical use on any extensive scale. Notes on its chemical nature will be found in a succeeding section. The easiest method of preparing it in palatable form is to dissolve it in water with a plentiful addition of fresh lemon-juice.

The formula we employ is as follows: Commercial glucose, 1 lb.; water, 1 quart; lemons, two. The glucose is dissolved by stirring into the boiling water, the lemons are squeezed into the solution, then cut in quarters, boiled with it for a few minutes, after which the solution is cooled and strained. A patient will drink daily upwards of a pound of glucose so prepared, in small drinks between or with meals. We have never encountered difficulty or complaint concerning it.

For experimental purposes we have used a similar but more exact formula: Commercial glucose, 1 lb. (i.e., 450 g.); water, about a pint; lemons, two. A solution is made as before, and, after cooling and straining, its total volume is made up to 900 c.cm., so that the final solution contains 1 g. of commercial glucose in every 2 c.cm. of fluid. Stronger solutions than this are syrupy and cannot be drunk readily, but this is only slightly stronger than the average home-made lemonade.

Nature of Commercial Glucose.

Glucose B.P. is a viscid syrup, prepared by the hydrolysis of Indian corn or other cereal starch with mineral acids. It appears that hydrochloric acid is now usually employed for this purpose, but some years ago sulphuric acid was generally used. Contamination of this acid with arsenic resulted in several epidemics of arsenical poisoning, with the result that the use of the commercial product in jams, &c., fell into great discredit. Such foods are to-day frequently labelled "guaranteed free from glucose." Glucose B.P. is guaranteed to contain less than two parts per million of arsenic, so that 42½ lb. of it would have to be taken before a patient could receive 1 gr. of arsenic. We have tested a number of samples from various sources, and Marsh's test for arsenic was negative in every case.

The exact chemical composition of commercial glucose is very difficult to determine; it consists of a mixture of dextrins, glucose, and maltose, all of which are dextrorotatory, the two latter reduce copper solutions, and the determination of the precise proportions of them in a given sample is a matter of the greatest difficulty to the analyst. All of these substances are readily hydrolysed to glucose by acid or the amylolytic enzymes of the digestive juices, with the exception of achroödextrin, which is stated to be less easily digested and not readily absorbed from the alimentary canal. The proportion of water present in glucose B.P. makes it necessarily weaker than crystalline or anhydrous glucose; the additional water appears to account for about 10 per cent. of the weight in any given sample.

The difficulty of precise analysis, and the varying amounts of water and of achroödextrin present, make it impossible to give exact figures as to the calorie-value of commercial glucose. It must be remembered that close inquiry reveals equal difficulty in determining the true calorie-value of almost every known class of food-stuff. Taking the calorie-value of the various carbohydrates present to be not less than 3·7 large calories per gramme, and allowing 60 per cent. as a conservative estimate of the amount of assimilable carbohydrate in average samples, we may assume that 1 lb. of commercial glucose will yield 1000 large calories when taken as a food. Dissolved in a minimum quantity of water it forms a strong syrup, and when diluted to the strength we use for clinical and experimental purposes, it is still a solution of very high osmotic pressure.

A most important difference between this substance and cane-sugar is that it is relatively less sweet; this is a property of considerable value, as it enables quantities to be taken greatly in excess of what can be accomplished with ordinary sugar.

PHYSIOLOGICAL EXPERIMENTS.

Clinical observation of cases when strong glucose solutions were being administered taught us that glycosuria following its use was a comparatively unimportant phenomenon. We had shared what we believe to be a very widespread opinion—namely, that glucose, when taken in a single dose exceeding about 150 g., will cause glycosuria in normal people, an amount roughly approximating to the excess over this figure being excreted by the urine. Medical literature abounds in reference to sugar-tolerance, but such references are almost entirely confined to observations upon diabetic subjects or those with various disorders of carbohydrate metabolism. Work on the upward limit of normals is sparse, and appears to have been largely confined to a few observations in which the oral dose of glucose had been determined by the appetite of the observer. From this erroneous deductions have been drawn. Even such an authority as F. M. Allen says,[1] "250 g. (of pure dextrose by mouth) may probably be considered as the upper normal limit," and, again, "the human tolerance by mouth must be figured as probably between 2 and 4 g. per kilo., with possible slight variations in either direction."

TABLE I.—*To Show Degree of Glycosuria Produced by Administration of Large Doses of Glucose by Mouth.*

Subject.	C.G. taken.	S.E. in urine.	Subject.	C.G. taken.	S.E. in urine.
	g.	g.		g.	g.
1	200	0·37	9	200	Nil.
2	200	Nil.	10	200	Nil.
3	200	Nil.	11	250	Nil.
4	200	Nil.	12	250	Nil.
5	200	Nil.	13	500	Trace.
6	200	0·12	14	500	Nil.
7	200	Nil.	15	500	0·16
8	200	0·65			

C.G., Commercial glucose. S.E., Sugar excreted.

To test the amount of sugar-loss likely to occur, after giving a single concentrated dose of glucose we administered ½ lb. or more to a number of healthy men, students and laboratory workers; the solution being that described in an earlier paragraph. Typical results are given in Table I.

It is clear from these results that, though these large doses may induce the passage of a trace of sugar into the urine, no appreciable loss occurs, the total amount of sugar excreted in the urine collected from 15 experiments in which from 200–500 g. of commercial glucose were taken by each subject only amounting to 1·3 g. This result agrees with those published by Taylor and Hulton,[2] who found that amounts of 500 g. of pure glucose given by mouth often produced no glycosuria and never a considerable passage of glucose into urine. Similar results are indicated by the work of Woodyatt, Sansum, and Wilder.[3]

In view of the current belief that the organism has definite limitations as to its capacity for metabolising large amounts of ingested sugar, these results are surprising, and immediately provoke inquiry as to the mechanism by which glucose is dealt with. With a view to gaining clearer knowledge on the problems concerning the fate of this glucose, we made closer investigations of those cases in whom a dose of 500 g. had been taken. The results of these more minute inquiries are as follows:—

(*a*) *Effects on the Amount and Quality of Urine Passed.*—The subjects were all observed in the morning; they were at that time fasting, urine was passed until the bladder was emptied, 500 g. of commercial glucose diluted to 1000 c.cm. volume, with lemon added, was then drunk, and the bladder subsequently emptied every half hour. Amount and specific gravity were noted in each specimen of urine, and tests for sugar made; when the latter were positive, the percentage of sugar was observed by the polarimetric method and the total sugar excretion calculated. (Table II.)

TABLE II.

Time of observation in relation to glucose meal		Before.	Hours after. ½	1	1½	2	4
Volume of urine in c.cm.	T.I.B.	?	25	850	430	about 100	—
	H.V.A.	90	125	100	48	16	—
	M.	50	25	15	18	18	170
Total sugar excreted in grammes	T.I.B.	Nil	Nil	Nil	Nil	Nil	—
	H.V.A.	,,	tr.	,,	,,	,,	—
	M.	,,	0·1	0·06	,,	,,	Nil
Specific gravity of urine	T.I.B.	?	1020	1001	1001	1008	—
	H.V.A.	1022	1008	1004	1016	1020	—
	M.	1022	1018	1024	1026	1024	1012

From these results it appears that in two cases there was an immediate diuresis with passage of very dilute urine, but the third case showed no renal effect save a slight glycosuria.

(*b*) *Effects on the Blood-sugar.*—To determine these, samples of blood were taken from the median basilic vein of each subject at regular intervals, the moment selected being immediately before or after the voiding of urine. About 10 c.cm. of blood were collected on each occasion, it being desirable to do a more complete analysis. Blood-sugar was estimated by the Folin-Wu method. (Table III.)

TABLE III.

Time of observation in relation to glucose meal		Before.	Hours after. ½	1	1½	2	4
Blood-sugar in mg. per 100 c.cm.	T.I.B.	88	114	100	88	78	—
	H.V.A.	90·9	116	81	85	85	—
	M.	83	125	98	95	100	90

From these figures it is clear (1) that nothing approaching what is usually considered a hyperglycæmia was produced in any of our subjects; (2) that, in the subject M., who showed definite glycosuria, the rise in blood-sugar was proportionally greater than in the others; (3) that in all subjects the maximum concentration of blood-sugar occurred in the first half hour after the ingestion of the glucose, and that after the first hour the glycosuria was not notably higher than when the subjects were fasting.

(*c*) *Effects on the Respiratory Exchange.*—With a view to examining these, samples of expired air were collected from one subject (H. V. A.) in a Douglas bag. The first sample was taken fasting, the second at a period one and half hours after the ingestion of 500 g. glucose. In both instances the subject was lying at complete rest on a couch, this rest having been begun 40 minutes before the first observation. (Table IV.)

TABLE IV.

Time of observation	Immediately before glucose.	1½ hours after glucose.
Corrected oxygen intake (c.cm. per minute)	240	244
Corrected CO_2 output	192	199
Respiratory quotient	0·8	0·81

Any difference between the results of these two observations lies well within the limits of experimental error.

(*d*) *An Unexpected Effect Observed.*—A very striking hypnotic effect was observed in two of these subjects (T. I. B. and H. V. A.). In both cases the effect was so entirely unexpected by the subject, and was so strong, that there can be no question of suggestion alone being the cause of it. Some hours after the glucose, two and a half hours in one case and three and a half hours in the other, the subject experienced a feeling of sleepiness so profound that he was quite unable to carry on his habitual duties. It should be noted that, after the first half hour, no subject has remarked disagreeable effects; up to this time there was, in each case, a feeling of abdominal distension consistent with the rapid ingestion of so large a volume as a litre of fluid. In later stages the subjects chatted, read, smoked, and helped the observers with details. Each ate a small lunch, experiencing some appetite but no hunger, and in the cases named, in one before and in both immediately after, there was a somnolence so profound that he was impelled to lie down and was immediately overcome by a sleep described as being far deeper than any he had usually experienced. This sleep lasted for several hours in each case, and its depth may be gauged by the fact that the sleeper was on each occasion not roused by noises close to him so loud as to attract other persons from neighbouring rooms. Beyond this somnolence no subject experienced any untoward effect; gastro-intestinal symptoms were absent.

(*e*) *Problem of the Fate of the Ingested Glucose.*—G. Graham estimates the total amount of circulating glucose in the blood at less than 5 g. Is a large amount, such as was taken in these experiments, held up for a long period in the alimentary canal before absorption? We have conducted a few experiments with stomach tubage to explore this possibility. A tube was swallowed by one subject every quarter of an hour after taking 500 g. At the end of two and a half hours there was abundant glucose solution left in the stomach, but its actual amount was not determined as we were anxious not to disturb the experiment as a whole. For reasons given in earlier paragraphs of this paper, it is impossible to determine accurately the exact glucose-content of this solution, but observations on its reducing power, as tested by the quantitative Benedict test, give a fairly accurate index of its concentration in various samples. Tested in this manner the concentration of successive samples removed by tubage in the above experiment were found to fall from an original reading of 14 per cent. to a figure of 9·5 per cent. at the end of two and a half hours.

In two previous experiments the same subject had taken different quantities of glucose and subsequent specimens were examined for sugar, with the results shown in Table V.

TABLE V.

Time after ingestion in hours ..		1½	½	¾	1	1½	Strength of glucose.
Glucose percentage in gastric sample ..	(a)	16·6	11·2	11·3	5·3		200 g. in 400 c.cm.
	(b)	7·3	8·4	7·0	6·5	3·6	100 g. in 400 c.cm.

In these experiments the subject had had a light breakfast one and a half hours before taking glucose. The results, though clearly only roughly accurate, may be taken with that above as indicating that strong glucose solutions tend to be delayed in the stomach until diluted considerably. As regards the total time elapsing before absorption from the intestine is complete we are unable to offer an opinion. A second question suggested by these experiments is whether hyperglycæmia is avoided during the absorption of these large quantities of sugar by means of some mechanism which withdraws water from the tissues into the general circulation. With a view to determining this we have made fuller observations, by means of the Folin-Wu method, on the samples of blood withdrawn. The results are given in Table VI.

TABLE VI.

Time of observation in relation to glucose meal		Before.	Hours after.				
			½	1	1½	2	4
Urea*	H.V.A.	40·2	29·2	30·3	26·8	27·9	
	M.	27·0	23·9	25·4	27·1	21·4	22·1
Non-protein nitrogen* ..	H.V.A.	34·2	30·2	28·6	31·6	33·3	
	M.	37·6	34·6	33·3	30·7	25·6	33·3
Creatinin* ..	H.V.A.	?	1·15	1·1	1·25	1·4	
	M.	1·7	1·7	1·7	1·6	1·4	1·4

* mg. per 100 c.cm.

Study of these figures shows a lowering of the concentration of the nitrogenous constituents of the blood; this supports the hypothesis that the absorption of sugar was in these cases accompanied by an hydræmia, fluid being withdrawn from the tissues into the main circulation. But any such hypothesis must be accepted with reserve until further evidence of dilution is obtained. Of the cases in whom this was observed, one had exhibited an early diuresis and somnolence at a later period. It seems curious that the kidney should deprive the blood of a relatively large volume of almost pure water at a moment when such diluting fluid is about to be in great demand. The somnolence is in accord with the hypothesis that active absorption will be accompanied by a relative hyperæmia in the splanchnic area and a consequent relative anæmia in the cerebral region; on the other hand, both subjects felt that the intensity of the drowsiness was much more akin to the effect of drugs of the chloral series than to mere post-prandial torpor. It remains possible that an important quantity of commercial glucose either escapes in the fæces or is destroyed by bacterial fermentation. We have no evidence on this point, but the entire absence of abdominal symptoms is strongly against it.

(*f*) *Effect upon Gastric Secretion.*—Our observations on this point have been limited to four cases. In these, stomach contents, removed at intervals after glucose ingestion, showed very little, if any, free hydrochloric acid to be present.

In two cases, where the fasting gastric content had been removed before taking glucose, there was no hydrochloric acid present at one, two, and two and a half hours after the meal. In cases where the fasting juice has not been removed, the free acid was absent in one case and present in a concentration of 8 c.cm. N/10 only in the other. These results agree with those of Pavlov and others as to the minimal effects of sugars and dextrins in exciting gastric secretion.

CLINICAL OBSERVATIONS.

In a previous communication[4] one of us (T. I. B.) has referred to the value of glucose when administered in large quantities in certain diseases. It has been freely used for a number of years and in many countries, but it is, we believe, rare for it to be employed in really important amounts, and the solutions usually ordered are so weak that it is doubtful whether the effects obtained differ materially from what might be expected if water alone had been used. As an example, it is common practice to give weak glucose solutions per rectum, or subcutaneously, after severe operations, as it has been found that stronger solutions tend to produce irritation of the mucous membrane of the colon, or sloughing of the subcutaneous tissues. It is therefore a difficult matter to administer more than a small quantity of glucose in this manner. When given by mouth such difficulties do not occur, and though in the post-operative type of case oral administration is often impossible, in other cases we believe that the use of large quantities of glucose is frequently of great value.

For a long time and in a very large number of patients we have now made use of this preparation, giving quantities equal to one pound or more daily, and we believe that the following properties are those which give indications for its employment: (1) It is palatable and can be assimilated in quantities which materially increase the daily calorie-intake without greatly affecting the patient's appetite; (2) it is absorbed with less call for work by the digestive glands than almost any other substance; (3) physiological and clinical observations made by us show that it evokes very little, if any, secretion of hydrochloric acid by the stomach; (4) being in complete solution it evokes very little motor response from the stomach during its passage into the intestine; and (5) it provides the tissues with the ideal substance (glucose) for counteracting any tendency to acidosis.

Illustrative Clinical Cases.

The facts to be learnt from study of the details of clinical cases in which we have applied these indications are general rather than particular. For this reason it has been felt wiser to suppress such details in the present communication, giving merely the broader aspects of typical cases in certain groups.

GROUP A.—*Acute Infections.*—(1) Typhoid fever and lobar pneumonia: In three such cases in adolescents ½ lb. of glucose was added to the daily ration of food. No increase in intestinal gas formation was noted; no glycosuria resulted. (2) Pulmonary tuberculosis: In four cases 1 lb. of glucose was given daily in addition to usual diet. Glycosuria of less than 1 g. daily was observed occasionally in one case. No gastro-intestinal symptoms; progress uninterrupted. General appetite not affected by the addition to the diet. (3) Acute hepatitis during puerperium: A case of difficult labour with prolonged anæsthesia and some laceration of vulval tissues. Profound jaundice, pyrexia, vomiting, complete absence of bile from stools. Glucose in quantities exceeding 1 lb. daily, started immediately after the vomiting had begun to be controlled. Rapid and uninterrupted recovery. No glycosuria.

GROUP B.—*Six Cases whose Major Symptom was Hæmatemesis.*—All these were cases which had exhibited hæmatemesis in such degree as seriously to endanger the patient's life. In two the primary disease was cirrhosis of the liver, in two gastric ulcer, in one carcinoma of the stomach, and in one the cause is unknown. All were treated by absolute rest, morphia and hyoscine hypodermically, and rectal feeding for some days. After half-hourly sips of

water had been tolerated without symptoms for 24 hours, glucose solution was added and within three days increased until 1 lb. daily was being taken; milk and carbohydrate gruels were added about a week later with simultaneous complete alkalinisation on familiar lines. In the subsequent treatment the administration of glucose was continued and utilised as the main calorie-supply in the diet for a long period.

GROUP C.—*Cases whose Major Symptom was Undernutrition.*—Many cases might be quoted under this heading, usually females of the type described by Robert Hutchison in his recent address on the "Chronic Abdomen."[5] Often admitted with a diagnosis of "dyspepsia" or "visceroptosis," more exact diagnosis was impossible in the majority of cases. Several, although devoid of definite signs of activity, gave evidence of partly-arrested tuberculous disease. Glucose has been added to the diet in a manner similar to that indicated in Group A. The following representative case may be quoted:—

Female, aged 26, for two years had been the victim of a severe anxiety neurosis, owing to somewhat delicate physique impairing her capacity for physical work and having simultaneously the knowledge that that work was the main financial support of her mother and sisters. Headache, indefinite pains in abdomen and limbs, extremities cold and somewhat cyanosed, complete absence of appetite for food. Weight on admission 5 st. 1 lb. No signs of organic disease discovered. The blood-sugar, at different times of day, at this period was always in the neighbourhood of 70 mg. per cent., a figure lower than we have observed in any other subject apart from patients receiving insulin. The patient was kept in bed, told that rapid improvement would occur, and given no treatment beyond 1 lb. of glucose daily, instructions being given that all meals, apart from this, were to be very small, but that the patient was to finish them completely. After ten days, there had been an increase in weight of 3 lb., blood-sugar had risen to 110 mg. per cent., the extremities were warm and less cyanosed. In the third week, 5 units of insulin were given morning and evening, in addition to previous treatment. Continuing on these lines, the patient's condition improved steadily, the weight increasing by 2 lb. weekly, until she was discharged weighing 7½ stone and went to a convalescent home. It is worthy of note that on three occasions she had slight hypoglycæmic reactions in spite of the glucose administration.

Discussion.

These clinical observations are not set down with any claim to establishing a novel therapeutic action of glucose. We have detailed them rather in illustration of what we believe to be the simple and rational method of securing a diet which is of high calorie-value, very easily assimilable, and without disadvantage in non-diabetic patients. The problem as to whether advantage is to be gained by the simultaneous administration of insulin in such cases is not at present answerable. The observations on the concentration of sugar in the blood before and after the assimilation of large quantities of glucose in normal persons, which we have detailed in the early sections of this paper, show that hyperglycæmia is not produced. The fate of the ingested sugar remains obscure; is it immediately converted into glycogen in the liver and muscles? If so, is there any limit to the capacity of the body for such conversion, and is the glycogen converted into fat? Again, does the hypodermic injection of insulin aid such conversion in the absence of hyperglycæmia? All these are to-day unanswerable questions.

Our observations throw some light on the problem of the limit of carbohydrate tolerance in general. It has been rather generally imagined that such tolerance is strictly limited by some metabolic capacity of the body. Thus it is common to describe as one of the chief characteristics of pituitary insufficiency "a rise in carbohydrate tolerance"; examination of the literature makes it exceedingly difficult to understand what is meant by such description. Persons suffering from Fröhlich's syndrome are not known to exhibit hypoglycæmia, nor has their curve of blood-sugar following glucose administration been proved to differ from that of a normal subject. The present work demonstrates that the only limit to the normal man's capacity for ingesting glucose is that imposed by his appetite. Glycosuria is only produced in a small proportion of such normal subjects and then in an unimportant degree. What, then, is an "increased carbohydrate tolerance"? The only possible explanation we have met with is that of H. Cushing,[6] who, speaking of persons with Fröhlich's syndrome, says that they are proverbially sweet-tooths.

Summary.

1. "Glucose B.P." is a substance which allows large quantities of glucose to be administered in palatable form and at a low cost.

2. Its exact chemical composition is difficult to determine, but it is shown to contain arsenic in negligible traces only and to have a calorie-value of about 1000 large calories per pound.

3. Normal persons can assimilate quantities of 200–500 g. in one dose without passing more than a trace of sugar in the urine.

4. The main effects on subjects who took 500 g. in this manner were (*a*) diuresis, (*b*) a rise in blood-sugar not greater than what occurs after a normal meal, (*c*) no change in the respiratory quotient, and (*d*) a marked hypnotic effect in two cases.

5. Large quantities of sugar taken in this manner appear to be detained and diluted in the stomach.

6. There is evidence of a dilution of the blood during such experiments.

7. Large quantities of glucose have been added to the diet as a therapeutic measure in many clinical cases, particularly in (*a*) acute infections; and (*b*) cases with marked undernutrition. Distinct benefit appears to have resulted and no ill-effects have been observed. In some of these cases the glucose administration was accompanied by small doses of insulin.

This work forms part of a report to the Medical Research Council. Part of the expenses were defrayed by grants from the Royal Society, through the Government's Grant Committee. We wish to express our obligation to Mr. W. Lawson for analyses of samples of commercial glucose and to those students of the Middlesex Hospital who have aided us by acting as subjects for experiment.

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DISLOCATION OF THE SEMILUNAR BONE.

WITH NOTES OF A CASE.

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DISLOCATION of the semilunar bone of the wrist is an unusual injury. Before the use of X rays the condition was rarely recognised. A fair number of these cases have been reported since, but it still frequently happens that the nature of the injury is not recognised when the patient first comes under observation, the condition being thought to be due to a sprain of the wrist—a diagnosis which far too often satisfies both doctor and patient. It not infrequently happens that the so-called "sprained wrist" is proved on further investigation to be a definite bony injury to the wrist-joint which can sometimes be diagnosed by careful clinical examination, and at other times requires the use of the X rays before a

diagnosis can be made. Dislocation of the semilunar bone may occur alone or it may be associated with a fracture of the scaphoid. Both these conditions, which have to be diagnosed from a Colles's fracture, give rise to very definite symptoms and physical signs which, if careful observations are made of the injured parts, should not be overlooked. A definite diagnosis can often be made clinically, and confirmed by the use of the X rays.

Diagnosis.

The physical signs of a dislocation of the semilunar bone are deformity of the wrist-joint, which, when viewed laterally, suggests the silver-fork deformity of a Colles's fracture, but on careful examination the styloid processes of the radius and ulna are found to bear their normal relations one with another. A tumour is felt and seen on the flexor surface of the wrist-joint, pressure on which causes pain in the distribution of the median nerve, the tumour feeling like a displaced carpal bone. There is practically no movement in the fingers or thumb, the incapacity from which is usually far greater than that seen in cases of injury of the scaphoid and in Colles's fracture. When both wrists are looked at from the palmar surface the deformity, as compared with that of a Colles's fracture, is striking and characteristic in its difference. The hand of the injured extremity appears to be that of a different person; it is smaller and shorter, and if the injury is of long standing there is almost sure to be much wasting of the muscles of the forearm and may be some wasting of the muscles in the hand supplied by the median nerve. The condition has also to be distinguished from a simple fracture of the scaphoid bone, the symptoms and physical signs of which are said often to be very definite—namely, (1) a localised swelling in relation to the radial half of the flexor surface of the wrist-joint, (2) acute tenderness in the anatomical snuff-box when the hand is adducted, (3) limitation of extension of the wrist by muscular spasm, any attempt to overcome which by force causes unbearable pain.

Treatment.

The treatment of dislocation of the semilunar bone depends on the stage at which the injury is recognised and seen, and on the presence or absence of the common associated injury—namely, fracture of the scaphoid. In general, the treatment can be considered under the following headings:—

(1) *Rest and massage without attempted reduction* of the dislocated bone. This is the line of treatment which has been adopted in cases in which the diagnosis has in the first place been missed. It is not likely to be followed by satisfactory results. When such cases come under observation it is found that there are much permanent stiffness of the wrist, weakness of the grip, and pain in the distribution of the median nerve. The possibility of improving such conditions when seen after a considerable lapse of time is not good.

(2) *Early or late reduction by manipulation* of the dislocated bone followed by rest, massage, and movements. Immediate reduction of the dislocated bone is the ideal treatment and will be followed by the best results. The best method of reducing the dislocated bone has been described by Codman and Chase. After carrying out careful researches on the movements of the wrist-joint and on the mechanics of dislocation of the semilunar bone, they say: "Since dislocation forward of the semilunar bone takes place by hyperextension, its reduction must take place by hyperflexion. Hyperextension is first made, to drag the convex surface of the semilunar back into contact with the radial articular surface and then, while the semilunar is prevented from rolling forward by pressure of the two thumbs of the surgeon at the anterior lip of the radius, hyperflexion is made over the surgeon's thumbs by an assistant. This allows the articular surface of the os magnum to again roll over the posterior horn of the semilunar bone to its proper facet."

From a study of recorded cases it seems that reduction by manipulation may be successful even after as long a time as a month after the injury. It is always advisable, therefore, to try to reduce the bone if there is any reasonable hope of this method of treatment being successful.

(3) *Reduction by an open operation* or excision when reduction cannot be successfully performed. If reduction fails an open operation will be indicated, by which it may be possible to reduce the bone, but if this cannot be done the bone should be excised.

(4) *Late Excision of the Bone.*—In long-standing cases in which there have been secondary changes in the bones of the joint, it is unlikely that reduction will be possible even by an open operation. The indication for excision in this type of case is pain in the distribution of the median nerve. If the dislocated bone presses on the nerve excision will relieve this pain, but the condition of the joint will not be much improved in these old cases. The recorded case was a simple dislocation of the semilunar bone of the right wrist, seen five days after the injury. All the typical signs and symptoms were present. Reduction was attempted both by manipulation and by open incision, but it was not found possible, even after so short a time as seven days. The bone was therefore removed. The wrist was "put up" in an extended position for a few days, massage and movements were started as soon as possible, with the result that the patient made a rapid recovery and was only left with a very slight disability.

Record of Case.

Injury to the Right Wrist-joint; Dislocation of the Semilunar Bone; Operation, Excision of the Dislocated Bone. Result: Recovery with a useful wrist.

E. R. H., a man aged 28, was sent to me by Dr. A. R. Kay, of Blakeney, on Feb. 28th, 1924, complaining of an injury to the right wrist-joint received while starting a motor-car on Feb. 24th. Since the injury the patient complains that he has not been able to use the wrist and fingers of the right hand owing to the pain and swelling.

Condition on Admission.—The right wrist is swollen, there is a prominence on the flexor aspect of the joint, the dorsal aspect of the joint is also swollen and prominent. On comparing the palmar surfaces of both wrists and hands the injured hand looks shorter and smaller than its fellow. The wrist and fingers are held slightly flexed and the patient is unable actively to extend the wrist or fingers, while passive movement of wrist and fingers is only possible to a very slight extent and then only with severe pain. The styloid processes of the radius and ulna bear their normal relations with each other. There is a hard, bony, irregular fixed swelling on the flexor aspect of the wrist-joint which feels like a dislocated carpal bone. No crepitus is felt. There is some numbness of sensation over the distribution of the median nerve, ulnar sensation being normal.

X Ray Examination.—There is a forward dislocation of the semilunar bone. There is no other evidence of injury to the bones of the carpus or wrist-joint.

Operation.—The patient was anæsthetised on March 3rd. It was not found possible to reduce the dislocation by manipulation. A vertical incision was therefore made over the flexor aspect of the wrist-joint, the incision being half an inch to the ulnar side of the tendon of the flexor carpi radialis. The deep fascia was incised, and the median nerve was found tightly stretched over the superficial aspect of the dislocated semilunar bone. It was carefully retracted and the semilunar bone exposed. Reduction was not even then possible by an open operation. The bone was therefore excised and the wound closed without drainage.

Progress.—The wrist was put up in an extended position for a few days and massage and movements started as soon as possible. The wound healed by primary union. The patient regained full movement in the thumb and fingers, and eight weeks after the operation the movements of the wrist were only very slightly limited, about one-eighth of full movement being lost, but the grip was strong and the disability, even so soon after the operation, was slight. There was no pain.

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Clinical and Laboratory Notes.

A CASE OF MENINGITIS FOLLOWING LUMBAR PUNCTURE: IRRIGATION; RECOVERY.

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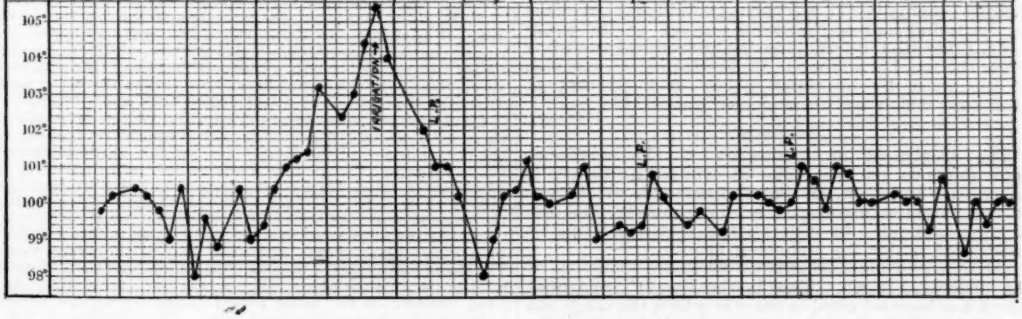
MENINGITIS as a sequel of lumbar puncture is a rare occurrence, and it is therefore of interest and importance to record a case in which treatment by irrigation was followed by recovery.

The patient, a male aged 42, was admitted to hospital in July, 1924, for pain in the back and legs following a lumbar puncture which had been performed for purposes of diagnosis three days previously.

History.—The history was that some 15 years previously he had first noticed some weakness of the left leg. This gradually increased and spread to the left arm, where it became associated with tremor. The right limbs were subsequently involved, and the condition finally was symmetrical. He gave a history of venereal infection (gonorrhœa) in 1898—before the onset of the nervous symptoms—and of several attacks of malaria.

In view of the early age of onset and the history of venereal infection the suspicion was entertained that this was possibly a case of mesencephalitis syphilitica, and it was for this reason that lumbar puncture had been performed.

Temperature Chart of a Case of Meningitis following Lumbar Puncture.



It was ascertained that the usual technique had been employed, the skin having been prepared by washing with ether and painting with picric acid. The only questionable factor was the sharpness of the lumbar puncture needle which had been used on a previous occasion.

The patient experienced no ill-effects until 48 hours after the puncture. He then felt some pain about the left iliac crest, which later increased in severity and extended to the bottom of the spine and buttocks. On the following day he had shooting pains in his legs and experienced difficulty in standing.

Condition on Admission.—When seen on admission (July 11th) he presented the typical appearance of a case of paralysis agitans, with mask-like face, characteristic rigidity, and "pill-rolling" tremors of the hands. He complained of severe pains in the regions described. The temperature (mouth) was 100° F. Kernig's sign was positive. The tendon-jerks were present and equal on the two sides. The abdominal reflexes were present and equal. No plantar responses were obtained. No abnormality of sensation was detected. There was no evidence of sepsis at or around the site of lumbar puncture.

July 12th: Temp. 100°. Patient complaining of intense pain; retention of urine; tendon-jerks present and equal. Lumbar puncture thrice attempted but no fluid obtained. 14th: Temp. 103°. Incontinence of fæces in addition to retention of urine; knee- and ankle-jerks absent. Patient delirious. 15th: Temp. 105·4°. Patient in a low muttering delirium. I saw him this day and thought him moribund. On performing lumbar puncture I obtained no fluid, but on attaching a syringe to the needle aspirated a small quantity of thick purulent material. I concluded that there was probably a local collection of intrathecal pus. As the man's condition appeared to be desperate, I conceived the idea of attempting to wash this out by forcible irrigation. Leaving the lumbar needle in situ, I therefore performed a cistern puncture. The fluid obtained was under pressure and slightly turbid. Leaving the cistern needle in place, I then fixed a large barrelled syringe to the lumbar needle and attempted to inject a quantity of normal saline. This at first met with obstruction. When the pressure was finally increased almost to the maximum to be obtained the patient cried out with pain, and the fluid began slowly to flow out of the syringe. At the same time a blood-stained and turbid fluid began to flow from the cistern needle. In this way 50 c.cm. of normal saline were forced from below upwards through the subarachnoid space. Towards the end of the procedure the escaping fluid, though still blood-stained, was less turbid. Subsequent investigations showed in the pus from lumbar puncture abundant staphylococci, with a pure growth of *Staph. aureus* on culture.

The chemical report upon the first specimen of cistern fluid (before irrigation) was: Protein, 0·11 per cent.; chlorides, 0·702 per cent.; about 70 cells per c.mm.—about one-third of which appear to be polymorphs. After the irrigation the temperature gradually fell and was normal on the morning of the 17th. At the same time the patient's general condition improved, and he became more rational.

Lumbar puncture was performed again on the 16th, and a drop or two of pus obtained by aspiration. The temperature rose to 101° on the evening of the 17th, but was never subsequently above 100°, while the improvement in the general condition was maintained. Signs of meningeal irritation being still present lumbar puncture and cistern puncture were both performed on the 19th. The cistern fluid was clear but contained 0·09 per cent. protein and white cells in excess. From lumbar puncture a trace of pus was obtained by aspiration. A final lumbar puncture was performed on the 21st when a trace of pus was again obtained on aspiration.

Since July 15th the lower limbs had appeared to be completely paralysed. On the 23rd power began to return, on the 24th the right knee-jerk was obtained, the others being absent, as also was the left lower abdominal. The patient could lift his right heel clear of the bed, and had some movement in his toes. He complained of numbness in the legs, but no definite sensory loss was made out. He continued to improve and left hospital on August 8th at his own request. His evening temperature had then not been above 99° for four days, and his general condition was good. He still, however, had retention of urine and imperfect control over the anal sphincter. The lower limbs were weak but he was able to sit up. The tendon-jerks were absent except the right knee-jerk. He was unfortunately not seen again, but wrote three months later to say that he had recovered sufficiently to walk and was going on a sea voyage.

Commentary.

In commenting upon this case one must admit the risk, albeit extremely small, of septic meningitis as a result of lumbar puncture, even when performed under aseptic conditions by an experienced worker as in the present case. It is the same risk of sepsis which is encountered in every surgical operation. It must have been the unfortunate experience of most surgeons to have known sepsis occur in such operations, for instance, as those for hernia and varicocele. The reason would seem to be that it is impossible to

sterilise absolutely the deeper layers of the skin. In such an operation as lumbar puncture it is almost inevitable that micro-organisms from the skin will occasionally be carried into the thecal space upon the point of the needle. This risk must be considerably increased when the point is in the least blunt or irregular, or the stilette not bevelled flush with the needle. In the opinion of the writer, therefore, a needle should always be subject to careful inspection after use, and if defective in any of these ways should be sharpened before being used again.

The measure of irrigating the subarachnoid space was undertaken as a desperate remedy when the patient appeared to be in extremis. Short of open operation, forcible washing through provided the only measure of evacuating the intrathecal abscess. The risk of setting up a further extension of the meningitis was seriously considered before the procedure was adopted, but when the fluid from the cistern puncture appeared turbid the conclusion arrived at was that the whole extent of the subarachnoid space was already infected—whether, indeed, staphylococci were present in the cistern fluid is a point which was unfortunately not settled. Irrigation from above downwards was entertained, but at once dismissed as dangerous. It was realised that the fluid would have to be introduced under a pressure which, if directed towards the medulla, would have almost certainly resulted in an immediate fatality.

Whether the patient would have improved with repeated lumbar punctures without irrigation is a matter open to doubt. A review of the clinical history and temperature chart suggests that the irrigation was the deciding factor in promoting recovery, and the case is recorded in the hope that it may be of use to others who may chance to encounter such a rare and disastrous complication of lumbar puncture.

My acknowledgments are due to Dr. A. P. Beddard for permission to publish the notes of this case.

A CASE OF ACQUIRED ACHOLURIC JAUNDICE.

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AND
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ACHOLURIC jaundice of the acquired type is a rare disease and comparatively few cases have been treated by splenectomy; the following case may therefore be of interest.

The patient, a man aged 38, had been jaundiced for 11 years. The colour of the skin and eyes varied from time to time, and he complained of severe itching of the skin at intervals. He noticed that his stools were apparently normal in colour, whereas the urine was dark. On four occasions he had attacks of abdominal pain and vomiting accompanied by a great increase in the jaundice.

When *examined* he complained of weakness and shortness of breath on walking any distance. His skin was of a deep lemon colour. The spleen was greatly enlarged, the lower pole being 1 inch below the umbilicus. The liver extended 1½ inches below the costal margin. The blood Wassermann test was negative.

The result of the blood examination was: total reds, 2,000,000; total whites, 6400; reticulated reds, 14 per cent.; hæmoglobin, 45 per cent. Differential count: polymorphs, 57 per cent.; lymphocytes, 38·5 per cent.; large mononuclears, 3 per cent.; eosinophiles, 1 per cent.; myelocytes, 0·5 per cent. The red cells showed marked polychromatophilia and punctate basophilia. There was no poikilocytosis, but anisocytosis was marked, and was due to the presence of many microcytes. In a count of 200 leucocytes 10 normoblasts were noted. The fragility of the red cells was increased, hæmolysis beginning in 0·58 per cent. and being completed in 0·34 per cent. saline. The test for auto-agglutinins in the blood-serum was positive. The result of the van den Bergh test was: direct reaction negative, indirect reaction positive (15 units of bilirubin). The urine was pink in colour and contained much urobilin. The test for bilirubin was negative. The stools appeared normal, but were very dark brown in colour, and gave an intense positive reaction for bile pigments. The lævulose test for hepatic insufficiency was positive, the result being: statim, 0·129 per cent.; ¼ hour after, 0·148 per cent.; ½ hour after, 0·157 per cent.; ¾ hour after, 0·166 per cent.; 1 hour after, 0.156 per cent.; 1½ hours after, 0·133 per cent.

The above findings—viz., non-obstructive jaundice and severe anæmia, with an increased number of reticulated red cells, together with increased fragility of the red cells—confirmed the clinical diagnosis of acholuric jaundice. The presence of auto-agglutinins in the blood-serum pointed to the fact that it was of the acquired type.

The spleen was removed by Mr. C. F. Walters on Sept. 22nd. The removal was effected without much difficulty, there being few adhesions. The liver was found to be enlarged but smooth, and no gall-stones could be detected. The spleen weighed 1200 g. and measured 23·5 by 15 by 7·5 cm. The capsule was fairly smooth, but showed two adhesions, one near the hilum and the other on the anterior surface. On section the pulp was dark red in colour, slightly soft, but not friable. Malpighian bodies could be distinctly seen but appeared smaller and more widely separated than in a normal adult spleen.

Microscopic examination showed that the venous sinuses and the lacunar blood spaces in the splenic pulp were overfilled with blood, with the result that the cells of the pulp cords were widely separated from one another. The Malpighian bodies were far apart and appeared somewhat smaller than normal. This would seem to have been the effect of general congestion and not to atrophy or necrosis, as they were normal in appearance and many showed germ centres. There was an increase in the amount of pigment present, which was found mostly in the large phagocytes lining the sinuses. There was no evidence of fibrotic changes in the capsule or connective-tissue framework, nor could any change be seen in the walls of the blood-vessels. These findings suggested that the increase in the size of the spleen was the response of the organ to a demand for increased activity, and not due to the direct action of any toxic agent.

The recovery after operation was uneventful, except that he had a temperature of 101° F. and complained of abdominal pain on the eighth day. However, enemas completely relieved him. The results of a blood examination on this day were: total reds, 3,900,000; total whites, 29,580; reticulated reds, 0·4 per cent.; hæmoglobin, 60 per cent. Differential count: polymorphs, 91 per cent.; lymphocytes, 3·5 per cent.; large mononuclears, 4·5 per cent.; basophiles, 1 per cent. The red cells showed slight inequality in size. There was no polychromatophilia or punctate basophilia, and no nucleated reds were seen. The fragility of the red cells was the same as before operation and the auto-agglutination test was still positive. The van den Bergh indirect reaction showed 2·5 units of bilirubin. Urobilinuria was still present but was not marked. On the ninth day the patient was clinically free from jaundice. The van den Bergh indirect reaction showed 1·25 units of bilirubin and the urine a trace of urobilin. On the tenth day the van den Bergh indirect reaction showed 0·5 units of bilirubin, and urobilinuria was absent. On the thirteenth day the lævulose test for hepatic insufficiency was found to be negative. The same result was obtained two weeks later.

Twenty-nine days after operation the patient had put on 13 lb. weight. The blood examination on this day was: total reds, 4,960,000; total whites, 8750; hæmoglobin, 90 per cent. Differential count: polymorphs, 46 per cent.; lymphocytes, 51 per cent.; large mononuclears, 1 per cent.; eosinophiles, 2 per cent. There were no abnormal red cells, and the auto-agglutination test was negative. Two weeks later the red cells had reached 5,200,000 and the hæmoglobin was 90 per cent., the polymorphs being 51 per cent. and lymphocytes 39 per cent. The auto-agglutination test was again negative but the increased fragility of the red cells remained. On Dec. 29th the red count was 5,760,000 and the hæmoglobin 100 per cent. The fragility test was about the same as before operation, hæmolysis beginning in 0·58 per cent. and being complete in 0·32 per cent. saline.

Commentary.

There would appear to have been two factors at work in this case: (1) the increased fragility of the red blood cells, and (2) the presence of auto-agglutinins in the blood-serum. The former remained after removal of the spleen which is in accordance with the findings of others; the latter, the auto-agglutinins, disappeared after splenectomy, which suggests that these abnormal substances may have been produced in the spleen. The complete disappearance of symptoms after splenectomy has been found in both congenital and acquired cases, but in this case it has been shown that the hepatic efficiency has been restored by the operation. It is possible that the overwork of the liver in the excessive excretion of bilirubin has damaged the efficiency of the liver cells, and that the return to normal is due to the rest after the excessive hæmolysis has been stopped.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

A MEETING of this Section was held on Feb. 13th, Sir ARNOLD LAWSON, the President of the Section, being in the chair.

The late Sir Anderson Critchett.

The PRESIDENT made sympathetic reference to the recent death of Sir Anderson Critchett, and paid a high tribute to him as a distinguished ophthalmologist, as a colleague, and as an English gentleman, declaring that in those privileged to enjoy his intimate friendship he inspired a feeling stronger than mere high regard. Mr. Ernest Clarke, as a friend of 40 years, seconded the vote of condolence with Lady Critchett and the members of the family, and it was carried in silence by members rising in their places.

Ætiology of Miners' Nystagmus.

Dr. T. L. LLEWELLYN, in a general review of this subject, exemplified by charts, graphs, tables, and photographs, said he regarded miners' nystagmus as an occupational disease of the general nervous system, one of gradual onset, and chiefly affecting workers at the coal-face. However, 25 per cent. of all men employed underground showed, on being examined, signs of the disease. The incidence of certified cases had shown a sharp rise since the inclusion of miners' nystagmus in the Schedule of Industrial Diseases, and particularly since the broadening of the definition in 1913, and the difficult economic conditions of the post-war period. He contended that the chief factor in the production of the disease was the *deficient illumination* of the coal-mine on account of the low candle-power of the lamps used and the absorption of light by the coal. The collier was, he said, a skilled workman, but he was required to do accurate work in a poor light. It appeared that the more the collier had to use his pick the more likely was he to develop the disease. Delay in dark adaptation and an increased retinal susceptibility were frequent symptoms. The general influence of light was shown by the facts that the condition was more prevalent in winter, the symptoms came on after dark, and the recovery-rate was greatest in summer. There was proportionally more of the disease in urban than in rural districts, and more among men working some seams than among others. Depth of the workings and the thickness of seams were not such important factors as the age of the workman, the character of the shale, and the amount of attention which the worker paid to his disease.

The Personal Factor.

Dr. Llewellyn regarded the personal factor in the disease as a very important one, for men suffering from illness due to accident or other cause very frequently attributed their incapacity to the nystagmus which they had had while working for years. The development of a neurosis helped men to escape from their uncongenial surroundings. Most cases of miners' nystagmus did not appear to have any neurosis; in a second group the disease was well marked and there were neurotic symptoms, while in a third class the dominant condition was neurosis and the nystagmus was slight or indefinite. This neurosis had no special characteristics, and its treatment was the same as for other neuroses. The provision of suitable work helped the recovery-rate, and improved the rate of incidence. Idleness among subjects of the disease resulted in such deterioration as to render the patients unemployable.

Results of Working in Dim Lights.

Prof. J. S. HALDANE said it was now clearly established that miners' nystagmus was brought about by using the eyes for the guidance of muscular movement when the absolute differences in luminosity of the objects seen were very low. Acuity of vision began to fall off seriously with low illuminations, and it might be sufficiently low to prevent white objects being distinguished from black ones, however large. Even with very moderate illumination, acuity of vision was much greater in the centre than at the periphery of the visual field. In foveal vision with sufficient luminosity the impression of consciousness of an object on which the eye was fixed was a lasting one; but with very low luminosity foveal vision lost its lasting character. A result of the impossibility of fixing the eye on the object was that the eye wandered about, picking the object up only momentarily with the fovea, then losing it again. The fatigue thus induced, the speaker considered, was the origin of the ultimate disturbance in ocular coördination which constituted miners' nystagmus. In mines where the men used oil cap-lamps there were no cases of nystagmus. The illumination required to prevent nystagmus was that which would permit lasting foveal vision, and so of fixation on the objects seen. Mr. Pooley had shown that the tendency to nystagmus was not dependent on defects of accommodation, but might depend largely on variations in the threshold for lasting foveal vision. In conclusion, Prof. Haldane said he did not consider that nystagmus was due in any way to the gases present in coal-mines.

The Quality of Illumination in Mines.

Mr. H. S. ELWORTHY (Ebbw Vale, Mon.) said that when investigating the cause of nystagmus he was much impressed by the blackness of the coal-mines, and he thought that illumination could best be increased by putting in light colours, which would reflect more light into the eyes of the miner. By better illumination he did not necessarily mean greater candle-power. If what he termed the "chromophotic index" was over 500 he believed there would be no nystagmus. When an oil lamp was taken into a mine, its candle-power was diminished as the yellow and orange rays disappeared, leaving a bluish-white light. On the lamp being again brought into the fresh air these yellow rays reappeared. Blue and violet rays were the most irritating to the eyes, and when objects of these colours were looked at for any considerable time they tended to disappear. It was recognised that the eyes needed to be protected from ultra-violet rays, otherwise damage to them might result. Exhaustion of the visual purple by those rays might well explain the eye movements in nystagmus, as the eyes avoided any continual fixing of these rays on any one part. Though the Ceag and Oldham lamps had a greater candle-power in a mine than an oil lamp, their light was of a worse quality than that of the oil lamps they replaced. Steam coal reflected twice as much blue as did house or anthracite coal, and among workers at the former nystagmus was much the more common. The carbon filament lamp produced an excellent light for the purpose and could be regarded as ideal. What was being aimed at was a filtering glass which would reduce the blue to 5 or 6 per cent. It was agreed that, from the point of view of the prevention of nystagmus, a light of 0·9 candle-power was required in order to be within the margin of safety. In the Ebbw Vale group of collieries, with 4600 men underground, there were 42 cases of nystagmus in 1914, while 10 years later there were only 7, and the only change which had been made in the equipment of the miners in the interval was the substitution of a yellow glass for the clear crystal. Mr. Elworthy said that when wages were high there were fewer cases of nystagmus—e.g., in 1917 there were only three instances among 5000 men. At the present time a man was financially better off by claiming the 35*s.* weekly compensation than by working three days a week. Given a correct glass and a sufficient light, he thought nystagmus would not occur at all.

The Compensation Factor.

Prof. E. L. COLLIS exhibited diagrams to show that the supposed recent increase in the incidence of miners'

nystagmus was not a real one. There had been an increase in the number of claims for compensation for the disease, which was, in his view, a combination of a physical symptom with underlying neurasthenia. Oscillation of the eyeballs was present without causing inconvenience in from 20 to 30 per cent. of miners working with poor illumination. In Belgium, payment of compensation on account of nystagmus was not continued longer than six months. In this country there was no time-limit, and the increase in the claims for compensation had been much greater since 1913, the year in which the Third Schedule included compensation for "a disease known as miners' nystagmus, whether the symptom of oscillation of the eyeballs be present or not." The weekly compensation figure had been increased from 20*s.* to 35*s.* He contended that the figures showed that when the economic life of the mining industry was unhealthy, the psychology of those employed in it became unhealthy too, and that then a certain number of latent cases from the potential reserves became manifest. It was the neurasthenic factor which was of urgent importance.

Mr. BINNS, representing a colliery owner's insurance company, said he believed many men were certified as having miners' nystagmus who had not that condition, the reason being that not all certifying surgeons were experts in regard to that disease. An appeal against such a diagnosis was made in 32 out of 428 claims, and in only 4 of the 32 was the appeal not sustained. Canary-coloured glasses for the miners had been found to be very useful, but it was not to be expected that they would produce an immediate cure. He expressed the hope that the profession would find a cure, so that a man suffering from nystagmus could be sent to hospital and return healthy. It was very difficult to find work on the surface for all the sufferers from miners' nystagmus.

Mr. G. H. POOLEY (Sheffield) spoke on the personal factor in the ætiology of this disease, dividing this factor into that in the observer and that in the person observed. The right attitude for the observer was to examine the whole of the men working in a particular mine, and as far as possible, under the actual conditions in which they did their work, and so ascertaining what percentage of the men showed nystagmus, and to what degree. He had recently been testing vision in an extremely dim light, working with as little as 0·00006 candle-power. The normal eye could still detect colour with this, the visual acuity being 1/72 of the normal. A relative central scotoma was experienced, the object looked at rapidly becoming dim, though on the temporal side was a point at which the visual acuity was greater than at the point of fixation. There was, under these conditions, much flickering and fatigue, and a moving object was seen more readily than was a stationary one. It was very difficult to prevent the eyes oscillating when working in a very dim light. With regard to the personal factor in the worker, the miner could still work, despite his having a very marked degree of oscillation. Some played cricket in quite good teams, and some had both defective vision from cataract as well as nystagmus, but they refused to apply for compensation and continued to get coal. It was to the financial advantage of the men that they should be under the compensation clauses than under the National Insurance Act. Much of the so-called "hysteria" met with in this association was really *malade imaginaire*.

The Effect of Mine Gases.

Dr. F. ROBSON remarked that the number of certified cases of miners' nystagmus was getting very large, and said that the knowledge derived from the intensive work of coal chemists helped the clinician to visualise a possible chemical relationship of coal to the neurological defects of the miner. The class of coal in connexion with which nystagmus chiefly arose was the bituminous, which contained a high percentage of volatile matter. Subjects of nystagmus might recover, but their return to the pit was marked by a recurrence. The disease was not found in workers in other kinds of mine, but it was significant that in one ironstone mine which had a single seam of coal running through it, cases of nystagmus occurred. Owing to its volatile constituents, bituminous coal was very liable to spontaneous combustion. There was no nystagmus in the coal-fields of America and South Africa, but there was a good deal of the disease in the coal-mines of New South Wales.

Dr. MILLAIS CULPIN contended that the symptoms associated with nystagmus were psycho-neurotic, and some of them were seen in the mental cases resulting from the war. Prominent among them were anxiety neuroses—economic anxiety in the case of the miner—photophobia, and head tremors. He sought to establish a close parallel between miners' nystagmus and the so-called shell-shock in soldiers.

Dr. C. F. HARFORD supported the view put forward by Dr. Culpin, contending that the morale of cases of miners' nystagmus was defective, and there was a readiness to avail themselves of the avenue of escape from their irksome conditions of employment.

Dr. H. W. EDDISON also argued along the same line, pointing out that an accident such as a blow on the leg, or domestic grief, determined the onset of nystagmus. Some showed an acute exacerbation during examination into their condition.

Mr. H. E. MITTEN, a civil engineer in a communication which was read, stressed the constrained attitude of the men in an insufficient light, but said there was a great difference among the men. He had 7000 men working underground under his own personal supervision, and there had been among them an improvement in the incidence of nystagmus from 0·95 per cent. in 1913 to 0·56 per cent. in 1924, and this he attributed to better illumination. He considered, from much observation, that the miner who found himself affected by nystagmus should endeavour to continue active exercise by working in some capacity, for idleness was likely to aggravate the disease.

Exhibition of Cases.

Mr. LINDSAY REA showed a patient who had presented the signs of orbital tumour, but was subjected to vigorous antisyphilitic treatment and recovered 6/6 vision in each eye.

Optic Nerve Tumours.

Mr. HUMPHREY NEAME showed a patient, aged 45, with a tumour of the optic nerve. The left pupil was displaced outwards to the extent of 2 mm., but the eye movements were full in all directions. No nasal or sinus disease was discoverable. The age of the patient rendered endothelioma likely, and he gave other reasons for this.—Mr. WILLIAMSON NOBLE showed a case of somewhat similar nature.

Mr. KENDALL exhibited a patient with angioma of retina.

SECTION OF ODONTOLOGY.

Drugs Used in Local Anæsthetics.

A MEETING of this Section was held on Feb. 23rd, Mr. J. G. TURNER, the President, in the chair.

Mr. F. N. DOUBLEDAY gave a report upon some drugs and solutions used in local anæsthetics. He said that for some time past he had concluded that sufficient attention was not paid to the character of the solutions which were used in regard to the effect which they had in causing those minor discomforts, swelling and after-pain, which had been, in his experience, the only unsatisfactory results from the use of local anæsthetics in dental practice. He had, therefore, been working on this problem for about a year, and the description of all that had been done by him and his co-workers on the subject was too long for a single contribution.

He first endeavoured to get an idea of the graphic structure of the drugs, and Prof. Gibson, of Guy's Hospital, had drawn out a table showing the graphic structure of some of the drugs in question. This was thrown on to the screen, and showed how slight a change

took place in these local anæsthetic compounds. Efforts were made to ascertain some tests for novocaine. The most reliable tests for drugs used in local anæsthesia of which he was aware were those in the second volume of Martindale's Pharmacopœia, but they were not absolute for all, and the absence of absolute tests for some drugs was a serious drawback. It was hoped to test dialysed solutions of novocaine against other drugs and examine the filtrate, but the absence of tests for the drugs precluded that. He had been dealing, however, with some important problems connected with temperature and evaporation. A local anæsthetic solution was boiled in the same manner as for a patient, and it was then put into a previously boiled syringe and allowed to become quite cold. A thermometer was kept in a tumbler of boiling water, so that the initial temperature of the thermometer should not in itself cause any alteration of the fluid in the barrel of the syringe. Screwing on to it a dummy head, the upper part of the syringe was removed with the barrel, and the bulb of the thermometer was placed into the barrel of the syringe. The result was a solution which was within a degree of body temperature. It was found that if the containing mugs which were supplied for boiling were permitted to boil furiously for a minute, or even for half that time, they would be found to contain only 2·5 c.cm. instead of the original 3 c.cm. The result of this was that, instead of injecting into the patient a solution which was practically isotonic with the fluids of the body, it was one which was unduly concentrated, and the patient had after-pain, swelling, stiffness, and discomfort. The same was true of short test-tubes. The longer a test-tube, the better, for fluid which evaporated in the boiling would re-condense on the upper part of the tube and find its way back to the bottom of it. A further matter, which was far from negligible, was the reaction of the containing glass upon the fluids; this glass should be relatively free from soda, otherwise the soda would dissolve and so affect the alkalinity or degree of acidity of the solution.

Experiments on Frogs' Hearts.

Mr. Doubleday said that much of the experimental work which had been done on the action of local anæsthetic drugs consisted in their injection either into the blood-stream or into the heart. In the former case an effect was produced differing from that following injection into connective tissue. When a drug like novocaine was injected into the tissues of the body it must first come into contact with the cells, and the manner in which that could be brought about was very interesting. In control experiments on man, he and his colleagues had done many mandibular injections upon themselves and upon others. The novocaine did not act on the central nervous system, but it was placed in the nerve trunk. One must think that the drug did come into contact directly on the protoplasm of the axis-cylinder process and inhibited its activity. The mandibular sensations were definite under local anæsthesia; there was first a tingling sensation of the lip, and if after five to ten minutes one bit on one's teeth the periodontal sensation was doughy. The sensation of the pulp was the last to go. If on attempting to extract a tooth the patient protested, a wait of ten minutes would cause this protest to disappear. This showed that the nerve-fibres passing into the mental nerve which supplied the skin of the lip must be peripheral in the nerve bundle of the inferior alveolar nerve, and that they were the first to be anæsthetised. Nearer towards the centre there must be involved the nerve-fibres of the periodontal membrane and the bone, and in the centre there must be the axis-cylinder process going to the pulp, and sensation was restored in the inverse direction. That depended on the rate of diffusion of the local anæsthetic and its linking with the axis-cylinder process.

The Psychological Human Factor.

When trying to estimate some of the finer effects upon human beings one was brought so greatly into relation with the psychological factor that it was felt better to experiment with frogs. He described the means adopted for ascertaining the dose of novocaine normal to the frog, various strengths being injected into frogs' right legs. Care had to be taken to inject in a direction away from the spinal cord, otherwise paralysis of the whole of the sacral nerves resulted, with hemiplegia of both legs. Using a 1¼ per cent. solution of novocaine and adrenalin the frog recovered from a ℥ 5 dose in one to one and a half hours, and that was comparable to the recovery time in the human; the dose for the frog was proportionately to the human much heavier. It was found that merely exposing the frog's heart and injecting saline did not interfere with its action. A dose of ℥ 2 novocaine and adrenalin produced on the frog's heart very slight alteration. With a ℥ 3 dose the heart was beginning to be slowed, and the force of the ventricular contraction was lessened. With ℥ 5 of the same mixture the heart continued to beat at first with very little change, but later there were signs that the auricular contraction was beginning to fail. Fifteen minutes later there was found to be a great and progressing inhibition of the heart's action. It was necessary to do the dissections with care, otherwise the loss of blood would, of itself, cause some definite heart failure. The conclusion arrived at was that novocaine and adrenalin injections had a definitely depressive action on the frog's heart.

He next set out to determine whether the effects just referred to were due to the novocaine or to the adrenalin. Therefore novocaine alone was injected, and the heart beats dropped from 31 to 20, but it could not be said that the heart was seriously affected; ℥ 5 of 1 in 50,000 adrenalin alone produced a slowing of the heart, the force of the ventricular contraction being reduced. With 1 in 20,000 solution there was a more definite slowing of the heart, with failure of its auricular contractions. Still, he had never seen a patient seriously ill from the injection of adrenalin alone, though he had on occasion used large doses of it; and the fact that it produced a quicker action of the anæsthetic and gave a deeper anæsthesia made it a very suitable drug for certain operations. He tried to find, however, whether there was a more suitable drug with which to combine adrenalin so as to minimise the effects which had been found to be due to it.

The Action of Caffeine and of Strychnine.

He tried caffeine in combination with novocaine and adrenalin and found that it failed to prevent their depressive effects, and it appeared to have no beneficial effect on the heart. Strychnine had been much recommended and widely used as a supposed antidote to novocaine and adrenalin, but he found in his experiments that it was powerless to stop threatened heart failure. Under an injection of ℥ 5 novocaine and adrenalin with atropine the heart was seen to be contracting vigorously, hence his conclusion was that atropine was by far the best drug to combine with novocaine and adrenalin in order to prevent the effects of adrenalin poisoning. But a great objection to the use of atropine, from the dentist's standpoint, was that it caused a paralysis of the secretory function of the salivary glands, so resulting in a very dry mouth; indeed, this was so marked that it was deliberately used for operation in which this dryness was sought after. Prof. Pembury had suggested to him that the patient's discomfort from this dryness could be mitigated by giving him a little glycerine and rose water for the mouth until the restoration of the secretory function.

In the frogs used the best place for the injections appeared to be the muscles of the back; then one was sure of getting absorption into the connective tissue, and not into the blood-stream or the lymphatic spaces. He showed, by means of coloured fluids, the path of the fluids after injection, and, by micro-photographs, the distortion of muscle-fibres by the forcible introduction of the injecting needle. There were also thrown on to the screen numerous photographs of blood-films taken after injection, and of sections of kidneys. Clinical results he said he hoped to bring

forward, with further experimental data, in a future communication.

Discussion.

Mr. F. ST. J. STEADMAN praised this piece of work, and said he could confirm the results set out by careful observation on human patients. Of the definite action of adrenalin on the heart he had full evidence. If three "E" tablets (equalling 1/400th of a grain) of adrenalin were given, the patient nearly always complained of throbbing in the head and general illness four or five hours after the injection. This could be avoided by reducing the dose. He also felt strongly that the character of the glass used had much to do with the quality of the solution used. He thought the difference in the time for induction of anæsthesia was not always due to inaccurate injecting; there was the factor of personal idiosyncrasy. In some, the anæsthesia might pass off even before the completion of the operation.

Dr. ALEXANDER LIVINGSTONE expressed the hope that this valuable research would be continued, and the results so far obtained largely disseminated. He did not think the frog an ideal animal on which to base conclusions for guidance in the case of the human subject, and considered that it was desirable to regard the time factor in the frog as 1/16th that of the human. He asked whether the various experiments were performed under, as far as ascertainable, identical physical conditions, such as temperature, humidity, the presence or absence of draughts. It was clear that the dangerous drug in the series used was adrenalin.

Mr. COLIN KEAY asked whether potassium sulphate had been tried in place of Ringer's solution, as some workers claimed that it doubled the potency of the novocaine. Before the war the Germans suggested about ½ per cent. sodium chloride and 0·4 per cent. potassium sulphate being used, and claimed that this brought the potency of novocaine practically to that of cocaine. He thought more research along these lines would be valuable.

Reply.

Mr. DOUBLEDAY, in reply, repeated his conviction that in patients who showed susceptibility to novocaine poisoning the bad effect was due to the adrenalin, but in the dosages used by dentists he did not think it constituted a harmful factor. He could not solve the cause of delayed anæsthesia which some patients showed. He thought that in the case of a cold-blooded animal like the frog it easily acclimatised itself to the ordinary physical conditions of the laboratory. It had been suggested that acid sodium phosphate might be added to the anæsthetic solution so as to increase its hypotonicity.

A large number of tracings, graphs, and tables, as well as specimens of experimented frogs, supported the thesis, and the paper was preceded by elaborate experiments on the subject. A cordial vote of thanks to Mr. Doubleday for his contribution was accorded, on the motion of the PRESIDENT.

CHELSEA CLINICAL SOCIETY.

A MEETING of this Society was held at St. George's Hospital on Feb. 17th, Dr. GORDON LANE, the President, in the chair.

Sir THOMAS PARKINSON opened a discussion on

Diseases of the Climacteric in Both Sexes.

He drew attention to the changes that accompanied this period of life in men. Many men at this time of life showed changes in arterial tension with or without renal changes. He pointed out the uselessness of attempting to reduce the blood pressure in these cases by means of drugs, and said that alteration in the surroundings of the man, with lessened diet and rest in bed, were the chief assets in securing relief. In the female the flushings seen at the climacteric were, he thought, due to the loss of ovarian secretion, and this loss upset the action of the thyroid and adrenals. At this period of life in both sexes the endocrine organs were very erratic. He considered the upset of the normal mental condition was due, in many cases, to the thyroid. The cause of the excessive headaches was possibly due to affections of the pituitary gland. It was most important that men should be treated before definite changes had been established in the vascular system. He thought that people of both sexes ate far too much at all periods of life, and that such excess was most harmful at this period of life.

Mr. A. RALPH THOMPSON put the age of the climacteric as from about 55 to 63 in the male. He showed that sepsis was more common in the male sex than in the female at about this time of life, and that the chief septic changes were associated with gangrenous or necrotic processes. With regard to the occurrence of growths of the bladder at this period of life, he thought that the practical side of this question was very different from that described in the text-books. He also drew attention to the comparatively early age at which enlargement of the prostate gland gave rise to symptoms. He operated upon this condition, not so much for the mechanical obstruction that it produced, but because the enlargement so frequently led to disease of the kidney, especially of the nature of chronic interstitial nephritis. In his opinion, the general rule with regard to growth of the prostate should be the same as that occurring in other organs of the body, and he said that he had had several cases where malignant disease was found that had not been anticipated when the enlargement of the prostate was first diagnosed. He thought that to wait for fixity and irregularity of the large prostate was to put off any adequate treatment until too late, as these were symptoms of involvement of other organs.

The speaker then commented on certain clinical facts he had observed in connexion with cases of cancer of different parts of the body. He had noted the curious absence of bloom from the complexion of the face in cases of malignant disease, which he compared with the absence of bloom observed on the leaves of plants grown under calcium-free conditions. In his experience, the thyroid was enlarged in not a few cases. He gave figures showing that in malignant cases the thyroid was, on an average, of greater capacity by 6 c.cm. in malignant than in non-malignant cases of death. Some of the thyroids in malignant disease that had come under his view were very large. Acting on these observations he had been used to prescribe calcium and thyroid, and he gave an interesting account of some cases of inoperable carcinoma of the bladder, in which some success had been seen after this treatment. In some cases weight had been put on by the patients so treated. He concluded by bringing forward some cases in whom it appeared that the prostate gland might exert some influence upon the question of malignant disease in its neighbourhood. He thought cancer was a deficiency disease.

Dr. THEODORE HYSLOP pointed out that many men exhibited psychical symptoms at about the age of 50, and he thought that this was associated with the periodical holding up of uric acid in the system. He advocated saline purges for this condition with diaphoresis.

The PRESIDENT drew attention to the possibility of the patient having started life in a wrong manner. These initial errors were emphasised as the patient grew older. He agreed with Sir Thomas Parkinson about the diet being too great in many cases. He mentioned, in particular, arterio-sclerosis, chronic nephritis, and glycosuria as being the common diseases of this period of life.

Dr. ERNEST YOUNG, Mr. IVOR BACK, and Dr. ERIC PRITCHARD also addressed the meeting, and Sir THOMAS PARKINSON and Mr. THOMPSON briefly replied.

LISTERIAN SOCIETY.

A MEETING of this Society was held at King's College Hospital on Feb. 18th, Mr. C. P. G. WAKELEY being in the chair.

Dr. WATTS EDEN delivered a lecture on

Puerperal Sepsis in Relation to its Mortality and Preventive Treatment.

Dr. Eden stated that during the last 13 years the general rate of puerperal mortality showed only a very inconsiderable improvement. There were three lines of defence: (1) Antenatal work; (2) efficient conduct of labour; and (3) early diagnosis and proper management of all cases of puerperal fever. With regard to the first, if this was efficiently done, vaginal examination after the commencement of labour in a straightforward case would seldom be necessary. It was regarded as an established fact that when puerperal sepsis occurred the cause was to be found, in the great majority of cases, in failure to achieve a surgically clean technique, the infection occurring during and not after labour. Referring to the "handy woman," so often called in by the poorer classes, the speaker said they were a definite source of sepsis to the lying-in woman, and until practitioners refused to work with such women the same conditions would exist. Notification of the disease had become a complete failure, and one eminent authority had gone so far as to say that in his district only 4 to 5 per cent. of cases were notified. This state of affairs was due to (1) uncertainty of diagnosis in the early stages; (2) reluctance of the doctor to expose his case; and (3) inadequate hospital provision for treatment.

In answering certain questions after the lecture Dr. Eden said that the vulva should always be shaved before applying forceps, but for a normal labour clipping the hair and applying iodine was sufficient. He did not recommend a rectal examination in place of a vaginal during labour, as this would be opening up another source of contamination.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A MEETING of this Society was held at Manchester on Jan. 16th, when Prof. A. DONALD, the retiring President, gave his valedictory address on the

Uterus as a Centre of Toxins and Irritative Products.

Referring briefly to the toxæmias of pregnancy and of the puerperium, he said there were two conditions which were of special importance—namely, toxic liquor amnii and toxic lochia. He quoted a case of acute urticaria which was undoubtedly due to changes in the liquor amnii, and also referred to some cases of acute toxæmia coming on about the twelfth day of the puerperium, which were due to the accumulation of toxic lochia in a flabby uterus, the cavity of which was below the level of the cervix. There were cases, he thought, in which these toxic elements, produced during abortion or confinement, might persist for a long time afterwards, and referred to a case of acute eczema which occurred some months after an abortion and which resisted all treatment until the uterus was curetted and then rapidly and permanently vanished. These toxins, he believed, might in many cases affect the heart functionally and also the nervous system, and might play a part in causing rheumatic affections. Their origin was not only in the contents of the uterus, but sometimes in its substance. They were undoubted indications that fibroid tumours of the uterus were associated with a toxic condition in the patient. This was most noticeable when a fibroid was undergoing rapid diminution at the menopause. There seemed to be disintegration of the growth and absorption of the products into the general system, and this was attended by palpitation, profuse sweating, loss of flesh, and cachexia.

The cases he had referred to occurred mostly in parous women, but he believed that they were sometimes seen in nulliparæ and virgins. Under irritative products he included cases in which the effects seemed to be purely local. Sometimes these cases seemed to be the result of bacterial invasion and sometimes they seemed to be due entirely to chemical irritation, but it was not always easy to distinguish between them. The so-called senile vaginitis, and especially the cases associated with senile endometritis and pyometra, seemed to be caused by bacterial invasion. Pruritus was another condition which might be due to the same cause, but it also occurred in single women. In the latter case it seemed to be often due to irritative elements in the menstrual discharge or to an irritating leucorrhœa. Another condition which might possibly be often due to irritation was dyspareunia. In the very severe cases there was probably a nervous or even a mental element, but in the more common type he believed that a uterine discharge (which might be slight in amount) kept up a condition of local irritability. His practice was to dilate and curette in these cases, and the results had been more satisfactory than by any other method of treatment. Finally, he thought that cervical erosion was often the result of an irritating discharge from the uterine cavity. The general opinion seemed to be that it spread from below, and many seemed to think that it was most commonly caused by gonorrhœa. He thought that this cause was greatly exaggerated. The irritation might follow a confinement, but it was not uncommon in virgins. The teaching was largely that it was purely cervical in origin, but there were strong grounds for believing that it was caused by the discharge from the uterus. In all cases of cervical erosion, except where there were reasons to believe that it was the result of gonorrhœa, the cavity of the uterus should be curetted. It was not uncommon in these cases to remove by the curette large masses of glandular tissue. A condition which seemed to him to prove the irritative effect of an intra-uterine discharge was the so-called erosion of the posterior lip in cases of retroversion. The erosion was not confined to the posterior lip, as could be demonstrated by observation when the uterus was straightened by means of a vulsellum, but it was chiefly situated there because the intra-uterine discharge, owing to the position of the uterus, was obliged to flow over the posterior lip of the cervix.

Pelvic Adenomyoma.

The adjourned discussion on Dr. KENNETH V. BAILEY'S paper on the Pathology of Ectopic Müllerianoma (pelvic adenomyoma), read at the meeting of the Society on Dec. 19th, 1924,[1] was then opened.

Mr. P. GOUGH thought the cell-implantation theory explained most satisfactorily many cases previously difficult to understand. He thought, however, there was still room for Cullen's mucosal theory and for the theory of development from Müllerian rests. He referred to a case he had recently seen of a tumour over the left pubic spine which became swollen and painful at each menstrual period, and at operation proved to be an adenomyoma of the round ligament. There was no evidence of any intra-pelvic disease and no hernial sac, so this tumour could not be accounted for by the implantation theory.

Mrs. BARTON HALL wondered whether retrograde menstruation was a pathological process as Dr. Bailey suggested and whether it was associated with other pathological changes, including an increase in the loss of surface epithelium. She asked why this actively invading epithelium did not embed itself in the wall of the vagina. She also asked as to the exciting cause and frequency of retrograde menstruation and if the growths described tended to become malignant.

Prof. W. E. FOTHERGILL wondered whether menstrual back flow was an isolated occurrence or took place repeatedly in certain women.

Miss M. H. F. IVENS had been able to excise localised

[1] See THE LANCET, Jan. 17th, p. 129.

uterine adenomyomata in one or two cases without removing the uterus.

Dr. DOUGAL thought that the evidence in favour of the Fallopian type of growth was not very convincing. It appeared to rest chiefly on the fact that the cells in these cases were ciliated, but the uterine cavity was also lined by ciliated epithelium, and he could not understand why menstrual hæmorrhage should be associated with the activity of tubal epithelium. Retrograde menstruation appeared to furnish the most reasonable explanation of how the implants reached the peritoneal cavity. Adenomyoma had been found in certain situations difficult to explain on this theory, but he thought that all of them could be so explained. He referred to the experiments on rabbits, successfully carried out by Victor Jacobson, proving that endometrial transplants in the peritoneal cavity were capable of active growth in the new situation. Clinical observations also supported this. The association of fibroids with adenomyoma had been frequently noted. He further referred to the confusion there was with regard to the nomenclature of this condition, and did not think Dr. Bailey had improved matters by suggesting another name. He thought the terms "endometrioma" and "endometriomyoma," suggested by Blair Bell, were the best so far.

Prof. BLAIR BELL being absent, his remarks were read by Dr. R. A. HENDRY. Prof. Blair Bell stated he had been so fortunate as to be present as a guest of the American Gynæcological Society on the historical occasion when Sampson read the first communication in which he demonstrated the endometrial character of the elements which were to be found in the ovaries in the circumstances under consideration. When Prof. Blair Bell returned home in possession of this knowledge he was able to discover endometrium in the ovaries in a case of bilateral "tarry cysts." This was the first case demonstrated and published in this country. He knew of no inherent reason why there should not be two types of ectopic gland-bearing tissue, one endometrial and the other of tubal origin, but it was only the endometriomata that had any practical or clinical interest, for menstruation could not occur in connexion with tubal glandular tissue. He thought that Dr. Bailey might be in error in describing the line of epithelium which he had illustrated on the surface of one ovary as tubal; it resembled germinal epithelium. Prof. Blair Bell held that in certain cases the "cellular spill and implantation theory" of Sampson could not apply. Endometriomyoma of the round ligament in the inguinal canal could not originate in this way. Such a tumour was congenital in nature, the endometrial tissue having been displaced by the external muscular coat of the uterus in the process of development. Prof. Blair Bell believed that endometriomata were both developmental and implantational in origin.

In his absence, Dr. HENDRY also read remarks for Dr. LEITH MURRAY, emphasising the need for keeping an open mind on the pathology, more particularly in view of the adhesions that occurred at certain sites, and the association in some cases of "adenomyoma" of the Fallopian tubes with the tubercle bacillus. Dr. Murray asked to what extent bilateral oöphorectomy influenced these ectopic growths when occurring, say, in the recto-vaginal space.

Reply.

Dr. BAILEY, in his reply, referred to mistakes made in the past as to the nature of this condition. He referred to the two views held with regard to the amount of epithelium lost from the endometrium during menstruation, and said that he believed that a considerable quantity was cast off into the uterine cavity during menstruation. The vaginal wall was often invaded to a certain extent by small nodules of growth. He had never found any trace of bacterial infection in these growths, and cultures from the chocolate fluid blood were always sterile. He had never observed a case exhibiting malignant change. He would like to emphasise that the invasion of the ovary by the growth caused the formation of a cavity without any evidence of the formation of a cyst wall. He therefore thought that the term "tarry cyst" was wrong, and that "ovarian blood cavities" or "menstrual blood cavities of the ovary" should be substituted. The "site of rupture," he held, was merely the original site of implantation. He believed that the invading elements were deposited probably at every menstrual period in some women, but did not necessarily invade at every deposition. He also believed that retrograde menstruation was of regular occurrence and that it might be one of the great factors in the causation of dysmenorrhœa in young women.

Exhibition of Cases and Specimens.

Dr. DOUGAL showed a specimen of a very large "*Tarry Cyst*" *of the Ovary* which was removed from a married woman aged 30, who had never been pregnant. The cyst measured about 10 inches in diameter and had thin walls except where adherent to the broad ligament. Its inner surface had no definite epithelial lining, but appeared to be composed of a striated layer of fibrin-like material. Outside this the wall was composed of compressed ovarian tissue. The chief interest lay in the size of the tumour, whose contents measured about 2 pints. Tarry cysts varied much in size but were rarely larger than a tangerine. The largest one in Sampson's series of cases measured about 5 inches in diameter.

Prof. FOTHERGILL showed a *Hæmatometra* associated with absence of the vagina, double hæmatosalpinx and ovarian blood cysts removed from a young girl 11 years of age. When examined under an anæsthetic the vaginal orifice admitted only the tip of the little finger and the urethra was a mere slit. Rectal examination showed a very large uterus. At the operation it was found that the vagina was only represented by a fibrous cord.

Cases of hæmatometra associated with other developmental abnormalities were referred to by Mr. J. PHILLIPS, Dr. W. FLETCHER SHAW, Dr. HENDRY, and others.

Dr. J. W. BURNS read notes of a case of *Hydatidiform Mole and Chorio-epithelioma* from the same patient.

Dr. J. E. GEMMELL (Liverpool) was elected President of the Society for the ensuing year.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society, held on Feb. 5th, Dr. PETER HOWIE in the chair, Prof. THEODORE SHENNAN read a paper on

Arterio-Venous Aneurysm in the Thorax.

The paper was based upon two cases in which Prof. Shennan had performed a post-mortem examination, and upon 72 other reported cases. After recalling the fact that William Hunter was the first to describe traumatic arterio-venous aneurysm and that James Syme was the first to describe spontaneous arterio-venous aneurysm, he proceeded to relate his two cases. In the first, perforation had occurred just below the azygos vein, and in the second, perforation had taken place into the right auricle just below the vena cava. The œdema, cyanosis, and distension of veins, limited to the upper part of the body, head, neck, and upper extremities, but descending lower on the back than on the front of the trunk, were then described, and the sharp contrast presented by the almost emaciated-looking lower part of the body was emphasised. In the first case a systolic bruit was heard over the situation of the aneurysm of the aorta, extending outwards from the aortic area. In the second a well-marked "bellows" murmur was heard in the aortic area. Death followed in the first case on the thirty-first day after the perforation occurred, and in the second about three weeks after the perforation. In both cases, at a post-mortem examination, well-marked syphilitic aortitis was found,

and in the second case the compression of the superior vena cava at its lower part had divided its lumen into two narrow channels.

In considering the whole subject on the basis of these two cases and the others culled from the literature, Prof. Shennan found that ten times as many males as females were affected, and chiefly between the ages of 40 and 60. A more or less definite history of syphilis was available in less than 40 per cent., but in only ten cases could syphilis be fairly reasonably excluded. The influence of a previous typhoid infection might have been important in three cases. In no case was any information given with regard to rheumatism. Seventeen cases were definitely alcoholic. A definite exciting cause of increased blood pressure was apparent in less than half the cases. In others the perforation occurred during the night, and in a considerable number the absence of strain was actually noted and commented upon. As a rule the onset of the swelling and cyanosis was stated to be sudden, but in at least six cases swelling had existed for some time before more severe symptoms developed, and this may have been the case in others. There was no pain at any time in eight cases. All, with three exceptions, suffered from severe dyspnœa, going on to orthopnœa. Perforations were found in the termination of the left innominate vein, at all parts of the superior vena cava, and in the upper part of the right auricle. The murmurs were continuous, or double or single systolic in cases in which perforation had occurred at any of these situations. In five cases there was no murmur at all. As to the swelling, it was shown that this depended more on the extent and degree of compression of the vena cava by the aneurysm than on the position of the perforation, though in some cases this was an important factor. No fewer than nine of the cases survived for a period of over two months, the duration varying from 11 weeks to 20 months, in five cases the duration being five months or over; and in one case—the only one in the series—there was apparent recovery.

The differential diagnosis from closure of the superior vena cava resulting from compression and thrombosis was not always easy, and sometimes seemed to be almost impossible. The severe œdema and cyanosis sharply limited to the upper half of the body anteriorly seemed to be more or less characteristic of varicose aneurysm, whereas in closure from compression and thrombosis such alterations might not be so extreme and did not develop so quickly because there was more opportunity for development of a collateral circulation; but the swelling in a few cases of compression had reached as high a grade as in the case of perforation. Moreover, the suddenness of development of the swelling was not absolutely pathognomonic because, occasionally, rapid thrombosis of the compressed superior vena cava—e.g., in dissecting aneurysm—might produce very similar signs. On the other hand, in Lichtheim's case of varicose aneurysm (*Deutsch. Med. Woch.*, 1905, xxxi., 207) the cyanosis and swelling developed slowly. The course of the illness was just as little diagnostic, as it might last only a few hours or many months. The venous pulsation in the neck was probably the best indication of a varicose aneurysm, but it was much more often absent than present, no doubt because of compression of the vein. As to the continuous blowing murmur which was so often described, this, as Prof. Shennan had shown, though an important sign, occurred in less than 50 per cent. of the cases, and, moreover, in a case reported by Dujardin-Beaumetz, in which there was almost complete closure of the superior vena cava resulting from compression of an aneurysm of the aorta, there was a continuous murmur. This, however, was not an important objection, because, as Prof. Shennan had already pointed out, other cases in which a similar pathological change was present showed a somewhat different murmur. One had to rest the diagnosis upon a combination of physical signs, seeing that even the absence of a murmur might not weigh greatly in the scale against the diagnosis of a varicose aneurysm.

Reviews and Notices of Books.

BACTERIOLOGY.

An Introduction to Practical Bacteriology. By T. J. MACKIE, M.D. Glasg., D.P.H. Oxf., Professor of Bacteriology, University of Edinburgh; and J. E. MCCARTNEY, M.D., D.Sc. Edin., Lecturer in Bacteriology in the University. Edinburgh: E. and S. Livingstone. 1925. Pp. 297. 8*s.* 6*d.*

CURRENT bacteriological methods, including the preparation of media, the use of the microscope, staining methods, animal inoculation, and the main principles of bacteriological diagnosis are conveniently collected together in this handy volume. The methods advocated are for the most part tried and reliable ones. In certain instances the technique described does not conform to the most usual present-day bacteriological practice. For example, there is no mention of the use of boiled-blood media for the cultivation of *B. influenzæ;* so uncertain a criterion as mannite fermentation is recommended for the identification of the *Streptococcus fæcalis;* sheep's heart extract is recommended for Wassermann antigen, and Wright's capsules for the collection of blood for the Widal test. Probably not many practising routine bacteriologists use Neisser's stain for the recognition of *B. diphtheriæ.* The scope of the book is ambitious, such subjects as intracranial inoculation for the diagnosis of rabies and the diagnosis of plague infection in wild rats being included; these seem rather advanced exercises to be indicated in a book "prepared primarily for the use of students in the University of Edinburgh." Many a teacher of bacteriology feels that he has achieved much if, at the end of his course, the student can look Gram's stain in the face, firmly and without misgivings. Nevertheless, this is a useful laboratory guide and, on the whole, an exceedingly trustworthy one.

Principles of Bacteriology. Third edition. By ARTHUR A. EISENBERG, A.B., M.D., Director of Laboratories, St. John's Hospital; Pathologist to Lakewood Hospital; Serologist to St. Ann's Hospital, Cleveland, Ohio. London: Henry Kimpton. 1924. Pp. 216. 10*s.* 6*d.*

THIS little text-book is intended primarily for the use of nurses who, in America, so the author tells us in his preface, receive instruction in bacteriology during the first year of their training. The book should certainly supply all the bacteriological lore that the nurse has need of. The author seeks to assimilate both gnats and camels, and, while the nurse early in her career is enlightened by a picture of a man looking down a miscroscope—to show how the thing is done (Fig. 16)—by the time her course in bacteriology is ended she is expected to be sufficiently proficient to answer, for example, questions of following calibre (No. 26, p. 207): What is an amboceptor? Agglutinin? Precipitin? Bacteriolysin? Hæmolysin? Phagocytosis? Opsonin? Leucocytosis? Complement? Weigert's Law? If thus is done to the nurses, what will be the lot of the Third M.B. student, such a one may well ask himself in horror! We ourselves do not find Weigert's Law easy to understand, and the index to Dr. Eisenberg's vade-mecum does not lead towards enlightenment. The contents of this book amply cover any field of bacterial knowledge which may be demanded of nurses; it is not suitable for medical students.

Handbook of Bacteriology. By JOSEPH W. BIGGER, M.D. Dub., F.R.C.P. Irel., D.P.H., Professor of Bacteriology, University of Dublin. London: Baillière, Tindall and Cox. 1925. Pp. 413. 12*s.* 6*d.*

THIS introductory text-book of bacteriology is an attempt to provide the medical student with a book that is smaller than those in current use, which,

the author complains, tend to drive him to the execrated but ever popular cram-books. We agree with Prof. Bigger that the advice to assimilate one of the standard text-books of pathology, such as "MacCullum" or "Muir," and at the same time to acquire a working knowledge of "Muir and Ritchie," is likely to suggest to the student, at the outset of his course in these important subjects, that the task set is beyond him. This little volume will, therefore, meet a definite need and is likely to have a large measure of popularity. The information conveyed is sound and sufficient and the illustrations, many of which are drawings by Dr. E. C. Smith, are good, although *B. coli* in Plate 3 looks very atypical. The author believes in teaching Ehrlich's conceptions and nomenclature of immunity, which he illustrates by rather unconventional diagrams: while we believe that nothing is lost to the student by omitting extremely hypothetical matter, which is apt to be looked upon as representative of material facts rather than as a scheme of illustration. In the section on streptococci the heat test for differentiation of the fæcalis or enterococcus type is not mentioned, although it is generally agreed to be the most reliable single test available. We do not agree with Prof. Bigger's presentation of Bordet's views upon the action of the bacteriophage of d'Herelle. These, however, are minor points, and the book can confidently be recommended as accurate and adequate for the student's purpose.

OPHTHALMOLOGY.

Refraction of the Eye, including Elementary Physiological Optics. By CHARLES GOULDEN, O.B.E., M.D., F.R.C.S., Ophthalmic Surgeon to the London Hospital. London: J. and A. Churchill. 1925. With 180 illustrations. Pp. 276. 10*s.* 6*d.*

IT is evident, says Sir John Parsons in his preface to this book, that a thorough knowledge of the principles of optics underlying the fundamental apparatus of vision is essential to a sound study of the subject. Mr. Goulden's book is written to supply this want, and from this point of view it will be found useful if not entirely successful. Thus an old stumbling-block for many is the difference between the principal points and the nodal points of the eyes. All books of this sort affect to explain this, but the practical significance of these mathematical abstractions is seldom rendered clear to the student weak in mathematics, and we do not find that Mr. Goulden has succeeded much better than his predecessors. On the other hand, the definitions of the angles α, γ, and κ, which have a practical importance in connexion with an apparent squint, are clear and to the point. The book, however, is by no means all mathematical, and we especially commend those parts of it which bear on the examination of patients. The chapters on ophthalmoscopy and retinoscopy are excellent. We do not remember, for instance, such a clear account elsewhere of the relative advantages of different positions of the source of light in retinoscopy for observing, on the one hand, the point of reversal, and, on the other, the band of light in astigmatism. The "scissors movement," too, a mystery to many, is well explained.

The book does not attempt to deal with the more general aspects of ophthalmic problems, such as the genesis of myopia or problems connected with binocular vision, but within its limits it is excellent. A few passages would bear revision in a second edition. On p. 130 the method of "fogging" the vision is recommended by means of either a convex or a concave glass, but surely, since the whole object of fogging is to eliminate the accommodation, the use of a concave glass is in most cases inadmissible. No doubt what is meant is, in myopic cases, to use a weaker concave glass than that which gives best vision, but this should be expressed. Again, on p. 133 the instructions for dealing with cases of anisometropia are not very intelligible, and the verbal construction is at fault. These, however, are defects easily remedied when a new edition is called for, and we have no doubt that this opportunity will occur at an early date.

Diseases of the Eye. A Handbook of Ophthalmic Practice for Students and Practitioners. Tenth edition. By GEORGE E. DE SCHWEINITZ, M.D., &c., Professor of Ophthalmology in the University of Pennsylvania. London and Philadelphia: W. B. Saunders Company. 1924. With 434 illustrations and seven coloured plates. Pp. 865. 50*s.*

THE revised edition of de Schweinitz's well-known text-book is well up to date. It is, of course, impossible for any text-book to keep pace with all the recent contributions to the theory and technique of a subject to which hundreds of workers in all civilised countries are constantly contributing their quota, to be found in specialist journals or proceedings of specialist societies. But good efforts are here made. For example, in the section on diseases of the cornea are reproductions of Holmes Spicer's diagrams illustrating the striate clearing of corneal opacities. We are grateful for these efforts, and do not complain that in the latest text-book there is no mention of Major Herbert's latest operation for iris inclusion in glaucoma, and no account of modern methods of testing for colour blindness; but a subject which is yearly, we may say monthly, absorbing in a greater degree the attention of ophthalmologists—the microscopical examination of the living eye with the help of the slit lamp—deserves more than a passing reference. An essential condition of a useful text-book, however, is that it should be limited to reasonable bulk. A readable summary of the authoritative knowledge existing at the date of publication,—that is all that is to be expected. This we do not fail to find in Prof. de Schweinitz's book. It would add still further to its utility if more references were given to the original papers of the vast number of authorities quoted in the text, so that a student desiring to probe any particular subject could do so easily.

The style is, as a rule, lucid, but there is still room for revision. Thus on p. 91 we read that according to Landolt the interval between fixation point and blind spot is greater in hyperopic than in myopic eyes, while a few lines further on we read that according to Hansell this average distance is almost identical in emmetropia and hyperopia, but in myopia is about 5 mm. (*sic*) greater. As the position of the blind spot has previously been defined in degrees this whole statement is calculated to confuse the reader. In the figures, the print, and the general get up of the book there is nothing wanting.

WILLIAM THOMPSON SEDGWICK.

A Pioneer of Public Health. By E. O. JORDAN and others. Yale University Press. London: Humphrey Milford, Oxford University Press. 1924. Pp. 193. 18*s.* 6*d.*

THIS book is published under the Williams Memorial Publication Fund, established in 1916 by a gift made to Yale University by Dr. G. C. F. Williams. The introduction is written by Sedgwick's wife and fitly commemorates one who must have been a very charming man. Sedgwick was born at West Hartford, Conn., in 1855, graduated from the Sheffield Scientific School in 1877, and entered as a medical student at Yale University in the same year. His account of the medical school at that date reads like that of a mediæval school, insomuch as medicine was apparently entirely taught from books and lectures, and anatomy was seemingly ignored. In 1879 Sedgwick and a friend of his were appointed to two vacant Fellowships in biology at Johns Hopkins University, and in 1883 he went to the Massachusetts Institute of Technology as assistant professor of biology. In 1888 he became consulting biologist to the State Board of Health of Massachusetts, and then began his life's work in sanitary science. A list of all the important offices which he filled connected with public

health will be found on p. 116, and the good influence which he exercised in America upon the foundation of public health theory and practice is evident throughout the book. The last chapter, which deals with Sedgwick's personal characteristics, gives a lively picture of an inspiring teacher and cheerful companion.

CHEMISTRY.

Dictionary of Applied Chemistry. Vol. V. Revised and enlarged edition. By Sir EDWARD THORPE, C.B., LL.D., F.R.S. London: Longmans, Green and Co. 1924. Pp. 702. 60*s.*

THE fifth volume of this monumental work starts with "Oxygen" and ends with "Rye." The high level of excellence is well maintained in this volume. A number of the articles will appeal to the medical man; amongst these may be mentioned photosynthesis by Prof. E. C. Baly, an investigator whose work has claimed much attention during the last few months. Prof. G. Barger deals in a lucid and readable manner with pepsin, the pituitary body, and putrefaction bases. Mr. K. S. Murray contributes an article on oxygen and its manufacture, and Prof. Sir W. Bragg one on radiology. A remarkably interesting article extending over 50 pages on photography is written by Mr. C. W. Gamble. This issue sadly synchronises with the death of Sir Edward Thorpe.

Qualitative Chemical Analysis. Fourth edition. By H. W. SCHIMPF, Ph.G., M.D. Revised by A. I. CONE, Pharm.D., Ph.G. London: Chapman and Hall. 1924. Pp. 201. 8*s.* 6*d.*

THIS work is based on lecture notes and laboratory exercises delivered to students at the Brooklyn College of Pharmacy. The author has endeavoured to compress into a small book most of the inorganic and organic qualitative reactions that a student of pharmacy is required to know. After dealing with elementary principles the analytical reactions of the metals and acids of pharmaceutical interest receive attention. The third part of the book is concerned with qualitative organic studies, and includes tests for official alkaloids and synthetic compounds as well as other organic substances used in medicine; also schemes for the detection of poisons and the analysis of some. The method of arrangement is logical and the diction concise. The section dealing with the qualitative analysis of organic substances is especially good, and should be of use to medical and pharmaceutical students in this country.

The Constituents of Coal-Tar. By PERCY E. SPIELMANN, Ph.D., B.Sc., F.I.C. London: Longmans, Green and Co. 1924. Pp. 219. 12*s.* 6*d.*

THIS book, one of a series of monographs on industrial chemistry edited by Sir Edward Thorpe, is mainly intended for the use of chemists who are interested in the individual substances which together constitute the material known as coal-tar. Tar is generally regarded as the source of a series of fractions possessing varying commercial values, and the fact that it consists of a number of chemical entities is frequently overlooked. The bodies obtained from tar are here divided into the general classes hydrocarbons, oxygen, sulphur and nitrogen compounds, the physical constants, preparation, properties, and reactions of each being recorded. The subject-matter of the volume is admirably arranged and well printed.

SKILL IN WORK AND PLAY.

By T. H. PEAR, M.A., B.Sc., Professor of Psychology in the University of Manchester; Fellow of King's College, London. London: Methuen and Co. 1924. Pp. 107. 4*s.*

THE study of methods of scholastic instruction has become the elaborate science of pedagogy. Instruction in games and martial exercises has been almost equally discussed, except perhaps in its theoretical aspect, but the methods of teaching people how to work, and even the selection of those who should teach, have been left to rule of thumb. This hindrance to industrial efficiency is being attacked by the Institute of Industrial Psychology and the Industrial Fatigue Board. Prof. Pear, more versatile than an official body, takes advantage of the peculiar phenomenon that in our country there are probably a greater number of teachers of games than of manual work, and that in some sports there is a technical language describing the muscular movements involved. He then combines the study of work and play in such manner that the swing of a golf club or of a miner's pick becomes of equal interest to the reader—provided, of course, that the latter is not biased by any predilection. The author's aim is to help those who would bring order into haphazard industrial training, and in this he succeeds. The laboratory psychologist and the student of human motives and temperament are often remote from each other; Prof. Pear combines the outlook and experience of both, and the happy result is a suggestive and useful book.

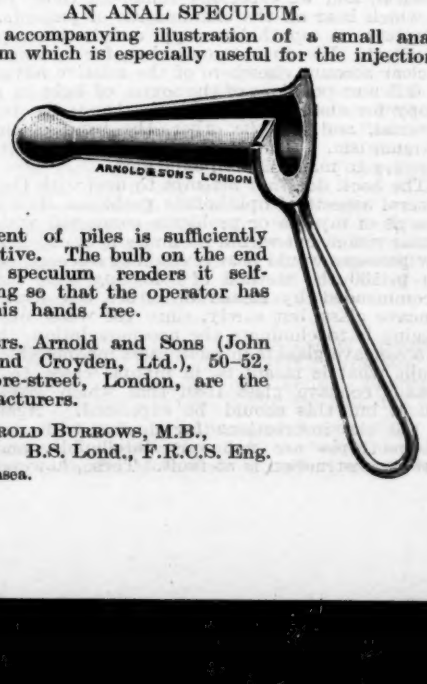
JOURNALS.

BOLETIN DEL INSTITUTO DE MEDICINA. Experimental para el Estudio y Tratamiento del Cancer. University de Buenos Aires.—The first number of this Bulletin, published August, 1924, contains two articles only, both by the Director, Dr. Augel H. Roffo, one on hydatid cysts produced experimentally in the brain and the other on the infectious sarcoma of fowls. The first article is concerned mainly with the locality and development of hydatid cysts after injection of infective material directly into the brain substance of rabbits. It brings out some points of interest, but is only remotely related to the problem of cancer. The second paper illustrates the growth of the round-celled sarcoma in fowls and its metastases. The first inoculation was made with material from another growth in the form of dry powder, and the remainder from a solution of the growth so produced in Ringer's fluid. The tumour develops very rapidly, is at its maximum in four weeks, and soon causes secondary deposits, most frequently in the lungs and liver. Both papers are copiously illustrated and the illustrations, on the whole, are good, the whole production being creditable to the University Press of Buenos Aires, from which it is issued, while its contents give ground for hoping that valuable work may be done in the future by this new experimental laboratory.

New Inventions.

AN ANAL SPECULUM.

THE accompanying illustration of a small anal speculum which is especially useful for the injection



treatment of piles is sufficiently descriptive. The bulb on the end of the speculum renders it self-retaining so that the operator has both his hands free.

Messrs. Arnold and Sons (John Bell and Croyden, Ltd.), 50–52, Wigmore-street, London, are the manufacturers.

HAROLD BURROWS, M.B.,
B.S. Lond., F.R.C.S. Eng.
Southsea.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 28, 1925.

PRESERVATIVES IN FOODS.

THE draft regulations[1] designed to give effect to the majority of the recommendations of the Departmental Committee on the Use of Preservatives and Colouring Matter in Food have been issued. Their general purport is the abolition of the use of formaldehyde, boric acid, and salicylic acid in food, and the permission of the addition of limited proportions either of sulphur dioxide and benzoic acid to certain specified articles of food, which must be labelled as containing preservatives. Colouring matter containing antimony, arsenic, cadmium, chromium, copper, mercury, lead, or zinc is forbidden, as are certain vegetable and coal-tar colours. No thickening substance, other than sugar, is to be added to cream. Representations on the draft regulations may be sent to the Ministry of Health within a period of 40 days from the date of their issue, and it may be anticipated from the controversy which has been aroused that representations will not be wanting. It is the proposed prohibition of boric acid and its compounds that will probably meet with most opposition, for it is contended by many authorities that is unnecessary and undesirable. The grounds advanced in favour of the borates are that adequate scientific evidence has not been disclosed that they are harmful when used as preservatives, while their rejection may lead to a great increase in the cost of foods hitherto so preserved, and an increase in the use of decomposed food. It is all to the good that such distinguished authorities as Sir WILLIAM POPE, Prof. F. W. TUNNICLIFFE, and Dr. ROBERT HUTCHISON have ventilated this question, since its importance is obvious, and it is highly desirable that any legislative action following this report should be based upon scientifically ascertained facts and not upon prejudice. At the same time the subject is so important to public health that it will be a pity if a controversy develops as to the merits or demerits of particular preservatives which will obscure the fundamental principles in question.

There are certain factors in the problem upon which medical men, at any rate, should be able to come to an agreement. The first of these is that the present position in regard to preservatives in food is an intolerable one, intolerable alike to the food manufacturer, the local authority, and the consumer. The former does not know where he stands and is prejudiced by unfair competition; the local authorities have no standards to guide them in taking legal action—moreover, separate actions in the court are wasteful and expensive; the consumers are, all unwittingly, obliged to consume a considerable proportion of their food mixed with chemicals which may be harmful, and as they do not know if they are there or not they cannot decline to buy such food. The second factor is that the basis of action advocated by the 1924 Departmental Committee is the only practicable one. This is the prohibition of all preservatives in foods except those definitely permitted. Prof. TUNNICLIFFE has suggested in the *Times* that legislation should follow on the lines of the recommendations of the 1900 Committee. The form of these recommendations, however, is regarded as thoroughly unsound by many authorities on public health; it appears only to tinker with the subject. They merely recommend that particular preservatives in certain foods should be permitted and certain others should not. It is surely futile to prohibit named preservatives, since the trade chemist will always be able to find new ones to replace them. It is a conspicuous merit of the 1924 Committee report that they recognise this fact. Dr. W. SAVAGE[2] puts this point clearly; he says: "The attitude should be that all preservatives must be prohibited until sanctioned, and the State, as represented by its Health Ministry, should be courageous enough to make up its mind which to sanction, while being at the same time, on the one hand, always ready to withdraw its consent if the accumulated scientific data, which should be available and utilised as the result of that sanction, proves that any preservative is prejudicial, and on the other hand ready to admit the use of others which scientific evidence shows to be without detriment." A third matter on which there should be agreement is that the name of the preservative and the amount added should be declared.

Assuming that these fundamental principles are agreed upon, there remain two questions which are clearly highly controversial. The first is as to whether any drastic prohibition of preservatives will make matters worse by restricting supplies and so enhancing their cost—leading to the consumption of decomposed food, while the second is the choice of the preservatives to be put on the permitted list. It is curious the insistence with which the increased cost argument turns up whenever a public health reform is involved. The opponents of clean milk insistently plead that if milk is obtained reasonably clean it will cost much more and be prohibitive in price and the last state be worse than the first. A similar argument was raised against the use of chemical preservatives in milk. The argument fails to take into consideration that preservatives are not only added to sound perishable articles to maintain their soundness, but are frequently added to foods which can perfectly well be kept fresh sufficiently long without their addition if cleanliness is maintained in preparation and handling. These preservatives are a direct substitute for cleanliness. The more the matter is investigated the fewer appear to be the foods for which preservatives are necessary, but that there are cases for their legitimate addition is the reason for a schedule of permitted preservatives. The suggestion that the restriction of preservatives will cause more decomposed food to be eaten, and in consequence a great increase in cases of food poisoning, is based upon the view that such food is a cause of food poisoning, a conception which does not appear to have any evidence in its favour. As we pointed out last week, the large majority of cases of food poisoning are traceable to the Salmonella group of bacteria, and no authenticated case of food poisoning due to the consumption of decomposed food is on record.

The choice of the preservatives to be scheduled as permitted, the amounts to be allowed, and the foods in which they are to be introduced form one of the most difficult problems connected with food preservation. Borates are rejected by the recommendations of the 1924 Departmental Committee and prohibited in the draft regulations. By some authorities, however, they are advocated as preferable to sulphites which it is proposed to allow in certain foods. It must be

[1] Draft, dated Feb. 17th, 1925, of the Public Health (Preservatives, &c., in Food) Regulations, 1925, proposed to be made by the Minister of Health. H.M. Stationery Office. 2*d*.

[2] Food Poisoning and Food Infections. Cambridge University Press. 1920. P. 214.

conceded that much of the evidence so far offered is unsatisfactory. It is desirable that the evidence given to the Departmental Committee which enabled them to state "we are nevertheless convinced that the prohibition of boric acid as a food preservative in force in many countries is justified" should be made generally available. Without that evidence it is not profitable to argue the respective demerits of these two groups of preservatives. But although the exact form in which regulations should be framed is not a matter on which general agreement can be expected, the fundamental principles which guided the recommendations of the 1924 Committee must be accepted as sound, and the profession as a whole will probably find little to complain of in the way in which the Ministry of Health is setting out to attack this complicated problem.

THE FUTURE OF MEDICINE IN INDIA.

THE report of the Royal Commission on the Superior Civil Services in India, referred to as the Lee Commission, has already been summarised in these columns as far as it affected the medical services in this country.[1] According to the statement of the Under Secretary of State for India during the last session of Parliament, "no decision has yet been reached on the recommendations of the Lee Commission as to the organisation of medical services in India," and the whole matter "is still under consideration." While this state of affairs exists there is bound to be widespread discussion and criticism of the recommendations, and as the publications and pronouncements on this subject grow more abundant it becomes increasingly difficult to relegate all prejudice to the background and face both the facts of the present situation and the future in India under the reforms which have become "the law of the land." Under existing conditions the members of the medical profession working in India belong to the following groups: the Royal Army Medical Corps working with the British troops; the Indian Medical Service, working partly with the Indian troops, but for the most part employed in civil duties; graduates of the Indian universities and members of the Indian Medical Department, consisting of "assistant surgeons," formerly styled apothecaries, who hold junior posts in British hospitals; and "sub-assistant surgeons," formerly "hospital assistants," serving with the Indian troops, and not to be confused with the civil sub-assistant surgeons, who form yet another class. The Lee Commission, it will be remembered, recommended with regard to the Indian Medical Service that no attempt should be made to perpetuate that Service as at present constituted, and that the medical needs of both the British and Indian armies in India should be provided by the Royal Army Medical Corps (India), which should absorb the Indian Medical Service. With regard to the needs of the civil population, it was recommended that a Civil Medical Service should be constituted on a provincial basis, and that entrance to this service should be regulated by a competitive examination. A minimum number of British officers would be maintained in this Civil Medical Service, this number being under direct control of the Secretary of State, and in the event of the number not being obtained by the local government, officers of the Royal Army Medical Corps (India) would be seconded for service in the civil department.

The critics of the recommendations of the Lee Commission thus briefly summarised can roughly be divided into those who consider that the proposals are too sweeping, and those who consider that they are not sweeping enough. Both sides in the discussion are bound to recognise that some change is desirable. The difficulties arising from two separate organisations, both concerned with the medical care of the troops, became apparent in the late war, when officers of the Royal Army Medical Corps and the Indian Medical Service had to work side by side. The new political outlook of India towards self-government to be reached in a gradual manner with a diminishing number of Europeans in the various civil services makes some change in the medical services an obvious necessity. From both the military and the civil points of view, therefore, some reforms are bound to take place. Major-General Sir GERALD GIFFARD, in a recent address before the East India Association,[2] considered that the Lee Commission had not gone far enough; he wished that the recommendations had been aimed at the closing and ending of all the medical services in India. He went on to state that "just as no country can hope to attain self-government and dominion status unless and until it can be responsible for its own law and order, and its own defence, so, in my opinion, no country can have a real medical profession until and unless it ceases to have the greatest part of its doctors in the Government services." Sir GERALD GIFFARD urges that medical education is the key to the situation. He holds that a medical college education in India should be complete in itself; that the curriculum of the existing colleges should be improved so that the degrees obtained have the approval of the General Medical Council, and that the admittedly imperfect and partial medical education of the Government medical schools—i.e., sub-assistant surgeon grade schools—should cease. He wants to see an independent medical profession properly educated and trained to carry on the work and traditions of the Indian Medical Service. The opinions expressed in the discussion which followed Sir GERALD GIFFARD'S address were not entirely unfavourable to his proposals. It was agreed that there was an urgent necessity for raising the standard of the qualifications and degrees in India to the level existing in England, but at the same time there was a strong plea for the retention of the sub-assistant surgeon grade, which, although imperfectly trained, apparently does much useful work. The other side of the question is set out in a representation submitted to the Secretary of State for India by the Anglo-India Association, London, which voices the opinions of those who believe that the Lee Commission has gone too far. It is considered that from an administrative point of view the proposals raise many difficulties. Some definite unification of the military and civil medical services along the lines of the recommendation of the Verney-Lovett Committee (1919) as to the formation of an Indian Medical Corps are discussed, and the conclusions of the Esher Committee (1919–1920) are put forward to show that such an amalgamation of the two services is impracticable under existing conditions, and that therefore a continuance of the Indian Medical Service is desirable. If, however, a unification of the two services was deemed essential to any future scheme, then it is contended it should take place along the lines of the recommendations of the Medical Services Committee (Verney-Lovett, 1919) towards the formation of an Indian Medical Corps to discharge all medical duties in India, civil and miltary.

Between these two opposing views there is a middle course along lines suggested by the Lee Commission. From the military side the difficulty of the provision

[1] THE LANCET, 1924, i., 1114.

[2] Asiatic Review, January, 1925.

of an adequate reserve has been raised. This seems to be met by a minute by Sir REGINALD CRADDOCK upon certain of the conclusions of the Commission. If sufficient British medical officers are forthcoming for the proposed Civil Medical Service the problem is settled, "but if not, the Royal Army Medical Corps (India) will either be asked to increase its reserve to make up the deficiency, or the Secretary of State will have to make it good by special recruitment and on terms which will ensure the supply." The scheme for the provision of a Royal Army Medical Corps (India) was proposed and elaborated by Sir CHARLES BURTCHAELL, late Director of the Medical Services, and from the military side this force will practically be the Indian Medical Service in another form without, it may be hoped, the old jealousies and frictions. Sir PATRICK HEHIR, writing in THE LANCET (1924, ii., 633), stated that "it may confidently be expected that a good number of well-qualified young men of the home medical schools desiring an Indian career will join this service with a view to obtaining professional work in the provinces, and when political opinion has settled down they will have a full and useful life." So much for the military side; from the civil point of view it has been strongly urged that all European members of the services in India have a right to attention by European doctors. This is met by the Lee Commission, who recommend the grouping of the districts of a province so that a British medical officer (civil or military) is posted to one station in each group with special arrangements for Europeans at any distance from the station. Any objections to the Lee Commission's proposals on this point are therefore without foundation. Pending any decision on the recommendations a limited number of European officers are being recruited for the Indian Medical Service on special terms. The dangers of considering this service as a permanent career by Europeans are obvious enough, but it does not follow that these temporary posts, which are being offered in attractive terms, will fail to give valuable experience to a man who is prepared to go abroad for a period at any rate before settling in consulting or general practice. The new policy in India is directed towards the progressive realisation of responsible government. The progress is bound to be slow and gradual, and it seems logical that the changes in the medical services should also be slow and gradual. If the general standard of medical education in India is to be raised, it will be some years before there is a body of adequately trained Indian medical practitioners to take part in the Indianisation of the medical services; but that this will ultimately result in medical as well as other services is regarded as inevitable by those familiar with the political outlook in that country.

SOME GREAT NAMES IN FRENCH MEDICINE.

IN the history of a nation one finds but a small place assigned to medical discoverers and discoveries. Prof. Réne Cruchet, of Bordeaux, in a lecture delivered to the Institut Français du Royaume Uni on Feb. 20th, commented on this and explained it as being due not to ingratitude on the part of the historian, but to the fact that a doctor's skill did not outlive the body it was practised on, and thus his work had of necessity an impermanent quality which was not shared with the products of the sculptor, the writer, or the artist. Prof. Cruchet gave an interesting summary of the development of the healing art from its earliest beginnings in France. It was in 1220 that the first French Faculty of Medicine at Montpellier was officially recognised by Cardinal Conrad, and although, as Prof. Cruchet himself pointed out, France has contributed less to medicine itself than she has to the other arts and sciences, from that time onwards she has produced a succession of great medical men. The earliest great name in French medicine is that of Guy de Chauliac, the father of French surgery, who in 1363 published a book on Surgery which for four centuries was a bible for his successors in that craft. Chauliac operated on hernias, removed cataracts, and advocated extension in the treatment of a fractured femur. Under the influence of Guy de Chauliac the Montpellier Faculty of Medicine remained pre-eminent during the fifteenth century, a century which was harassed by epidemics of plague, typhus, "ergot gangrene," and leprosy. From 1376, by royal edict, the professors of that school were permitted to hold practical demonstrations in anatomy on the dead bodies of criminals. It was not until 1498 that the same privilege was accorded to the Faculty of Paris.

About 1540 Vesalius published his work on the Structure of the Human Body after several years' study at Montpellier. There he had as his teacher one Rondelet, who, if he have no other claim to immortality, has been pictured for ever in the character of Rondibilis by Rabelais, who was his pupil. Among the friends and pupils of Rondelet was a group of men, Platter, Lobel, Delécluse, and Bauhin, whom Linnæus called the fathers of botany, and who were the forerunners of the genius of Boerhaave. The sixteenth century may be called the century of contagious diseases, and among the names of those physicians of that date are Houllier, Frenel, physician to Henry II., and William Vaillau, who helped to differentiate various types of epidemic fever. Vaillau, in particular, separated small-pox from measles, and left a graphic record of the characteristic symptoms of the onset of the latter disease. He also gave the first description in 1578 of whooping-cough, which he called Tussis quinta or quintana. But the outstanding figure of the sixteenth century is Ambroise Paré (1517–1590), of Laval, who laid the foundation of modern surgery. While according due homage to the teachers of the old world, he nevertheless was imbued with the new spirit of learning, which so marked the renaissance. The century of Louis XIV., the seventeenth, had no distinguished name in French medicine, for the whole art in France was overshadowed by the works of Harvey and Sydenham in England, but it would not be fair to take Molière's estimate of contemporary medicine as altogether a just one. In 1651 Jean Pecquet discovered the lymphatic circulation, and a little later Mauriceau wrote a treatise on Obstetrics, which may be considered as the first valuable work which had appeared on this subject. In the eighteenth century medicine broke away from the dogmatic conceptions which had dominated it in the preceding 100 years. The great scientific movement had begun which was going to transform the whole of man's outlook towards the body. Two names stand out, those of Théophile de Borde and De Barthez, who were forerunners in France of the return to the Hippocratic spirit of clinical observation.

With the nineteenth century biology became a science, and in turn was forged into a weapon for the fight against disease. Bichat (1771–1802), inspired by Borde, first described the different kinds of animal tissues, and following him came the period of experimental medicine, the discovery of physiological functions, the work of Magendie and Claude Bernard. Claude Bernard studied the action of poisons on living tissues and concluded that diseases acted on the body as poisons, but at the time of his death in 1878, Pasteur had already shown by inoculation that anthrax was caused by the anthrax bacillus. This was the beginning of the microbic theory of disease. Physics and chemistry also paid their tribute to medicine in the hands of Duchenne and Mme. Curie. How many of the great names of nineteenth century medicine in France are familiar to us? Baudelocque in obstetrics, Laënnec, Trousseau, and Charcot in

medicine, Dupuytren, Nélaton, and Terrier in surgery, Pinel and Esquirol the pioneers of the humane treatment of the insane, among others. Of our own medical leaders, one doubts if the list of familiar names would be much longer. Medicine triumphs in the present, for as Dr. Cruchet says, it is a living thing, and cares little about its own ancestry.

Annotations.

"Ne quid nimis."

HEXYL RESORCINOL AS A URINARY ANTISEPTIC.

URINARY infections, particularly pyelitis, provide one of the most trying problems in treatment. The majority of those who have to deal with them are willing to acknowledge that this field of therapy admits of wide improvement. Up to the present no drug administered by the mouth can be relied on to cure a chronic pyelitis, still less a chronic pyelonephritis, and the topical application of lavage is admittedly of limited usefulness. For this reason the announcement of the discovery of a new urinary antiseptic of great potency by a worker in Johns Hopkins University, Baltimore, has aroused interest The drug referred to is "Hexyl Resorcinol," having the formula—

$CH_3 . CH_2 . CH_2 . CH_2 . CH_2 . CH_3$

An account of the properties of the drug was given towards the end of last year by Veader Leonard.[1] The starting-point of Leonard's investigations was the synthesis of certain of the lower homologues of a series of alkyl resorcinols by Johnson[2 3] and his co-workers in 1913. It was found that the successive addition of carbon atoms to the alkyl chain was followed by a pronounced increase in bactericidal properties, and a coincident diminution in toxicity to experimental animals. Hexyl resorcinol is claimed to fulfil all the experimental qualifications of the ideal urinary antiseptic—viz., it is chemically stable, non-toxic, and non-irritating to the urinary tract, it has an antiseptic action in high dilutions in urine of any reaction, and is eliminated in high percentage by the kidney. In addition it is said to be actively bactericidal. It is found, however, that in human urine the drug is not infrequently secreted as a conjugate, and that this leads to a loss of the bactericidal action in the urine. Nevertheless, even in patients who apparently conjugate hexyl resorcinol very completely, the difficulty can be got over by regular administration over several consecutive days. One other point seems of importance—viz., that the simultaneous exhibition of sodium bicarbonate also destroys the bactericidal properties of the urine, not apparently because it makes the urine alkaline, but perhaps because it in some way facilitates the complete conjugation of the drug. It is disappointing, and detracts considerably from the interest and value of the paper that no clinical results are given by Leonard. He does sum up generally results of treatment in human patients, but no detailed account is presented. He claims that all the coccal infections of the urinary tract clear up rapidly under hexyl resorcinol and without any other treatment. In coliform infections when the bacterial count is low, his drug is efficacious; when the count is high, disinfection is not obtained without adjuvant local treatment, and even then persistent treatment is necessary. And when the infection has spread below the surface of the mucous membrane the treatment is of no avail at all. Frank Kidd[4] has pointed out, and none will gainsay him, that of all renal infections probably about 70 per cent. are coliform. He reports 140 cases of pyelitis in which 117 were infected by *Bacillus coli*. It is just the infections by coliforms which Leonard admits are least influenced by hexyl resorcinol, and his remarks on his results in coli infections might really have been written by any other writer about any other urinary antiseptic. Doubtless in the laboratory hexyl resorcinol is a powerful bactericide and an admirable antiseptic, but the human body is not a glass test-tube on a laboratory bench. The usual problem confronting the surgeon in these cases is that of a patient who has had a *Bacillus coli* pyelitis for a long time; nothing has so far brought about any improvement, and the patient grows tired of the whole business. Hexyl resorcinol may help here, and it should certainly be tried, for while the author does not claim that it is the last word in the treatment of all urinary infections, he does put forward strong claims for serious experimental trial.

[1] Journal of Urology, 1924, xii., 585–610.
[2] Johnson and Hodge: Jour. American Chem. Soc., 1913, xxxv., 529.
[3] Johnson and Lane: Ibid., 1921, xliii., 348.

AN INTERESTING RETROSPECT.[5]

George Sterling Ryerson, who has just published an interesting account of his strenuous life, came of an old Dutch family which first settled in New Amsterdam, the New York of to-day, in 1647. During the Revolution of 1775 the family were divided, and on the conclusion of peace the Loyalist members migrated to Canada. The writer of the book now before us was born in 1858 (p. 20) or 1855 (p. 32), being the only child of his father's third wife. He studied medicine in Toronto, Edinburgh, and Paris, and later in Austria and Germany, so that when he started practice in Toronto in 1880 he had an unusually cosmopolitan outlook. He served as a youthful private in the Queen's Own Rifles in the Fenian Raid, and as a surgeon with the Royal Grenadiers during the North-West Rebellion of 1885. In 1892 he gained a seat in the Ontario Legislature, and in the same year began his long struggle for the reform of the Militia Medical Service. In 1895 he organised the St. John Ambulance Association in Canada, and in 1896 established a branch of the Red Cross in Canada. For all his services in ambulance and army medical service work we must refer readers to the book itself, as well as for his accounts of the Boer War and the late war. In this latter struggle he not only gave his own work, but he also lost his son, killed at St. Julien, and his wife in the torpedoing of the *Lusitania*. The book is a record of good work unassumingly performed; but it is marred by errors which might easily have been corrected. The author says on p. 100 that the Order of St. John of Jerusalem was founded by Peter the Hermit at Jerusalem in 1030, having its origin "in the necessity for medical aid during the Crusades." Now the first Crusade started in 1095. It is true that there was a hospital in Jerusalem dedicated to St. John the Almoner, Patriarch of Alexandria, founded sometime before the recovery of the Holy Land by Godfrey, but Peter the Hermit did not visit the Holy Land until about 1094. After Godfrey had captured Jerusalem the dedication of the hospital was changed from St. John the Almoner to St. John Baptist and the society was organised as an Order in 1118. The curious thing is that Dr. Ryerson gives as his authority for his

[4] Kidd, F.: Common Infections of the Kidneys, Oxford University Press. P. 14.
[5] Looking Backward. By Major-General G. S. Ryerson, M.D., C.M., Canadian Army Medical Services. Toronto: The Ryerson Press. 1924. Pp. 263. $2.50.

statement Bedford and Holbeche's Order of St. John of Jerusalem, which says nothing about Peter the Hermit. Those who wish to investigate further will find an account of the rise of the hospital and Order in the Evagatorium of Felix Fabri, vol. ii., pp. 246 and 274 of Hassler's edition, 1843. Dr. Ryerson's memory has misled him when on p. 129 he speaks of Granada Cathedral being Gothic. As a matter of fact the building is a weak example of Græco-Roman style and the *trascoro*—i.e., the west end of the choir—is in the peculiarly offensive style known as churrigueresqe, from the architect Churriguera. The Capilla de los Reyes, however, *is* Gothic. The presence of such errors should not deter anyone from reading this book, which is full of interesting matter.

THE CONTROL OF HOOKWORM DISEASE.

FOR the last four years an American Commission has been at work in the West Indies and South America on the essential problems of hookworm control and possible eradication. During this time many valuable investigations have been undertaken, and over 33 reports on the work accomplished have been published in the *American Journal of Hygiene*. The thirty-fourth report, which has recently appeared, and summarises the previous ones, is by Dr. W. W. Cort, who is well known as one of the most active workers in this branch of medicine, while he has also been responsible for formulating the general scheme of prevention and research. One detects in this report no unwarranted claim that the problem of hookworm prevention has been finally solved; indeed, the opinion is expressed that further intensive researches by numerous investigators are still necessary before a complete knowledge of the life-cycle of the ankylostome is obtained and the prevention of the disease thereby placed on an entirely satisfactory scientific basis. Dr. Cort and his colleagues have especially concerned themselves with the practical sanitary aspects of the problem. They have endeavoured to ascertain the complete story of the cycle of the larval ankylostome in the soil up to the point when it is capable of reinfecting man. The part played by domestic animals, especially fowls and pigs, in the dissemination of the disease has received especial attention, and a new species of hookworm has been discovered in the pig. Up till comparatively recently it has been considered that larvæ in infected fæces could be exterminated by being buried deeply in the soil; unfortunately, however, this idea has proved to be fallacious; the larvæ are able to migrate in a vertical direction from great depths in the soil, especially when it is of a sandy or loamy character.

The outstanding difficulty in the prophylaxis of hookworm disease in a primitive community is really a question of administration, discipline, and education. The natural habits of the people have become so deeply ingrained that it is impossible to change them in a short space of time, and undoubtedly it is this factor which has hitherto proved to be the stumbling-block of every well-organised attempt at hookworm eradication. The prevention of promiscuous defæcation in suitable soil cannot be accomplished, and it is now known that such soil remains infective for a considerable length of time. This difficulty existed in the former European outbreaks of ankylostomiasis, and it is therefore no matter of surprise that in South America it is no easier to solve. The thirty-fourth report of the Rockefeller Commission marks the end of its labours in the West Indies, but certain lines of investigation, which are indicated, continue to receive the attention of various workers. The reward of the Commission's labours may at present appear to be a small one, as the professed object has not been entirely attained, but we have no doubt that largely as a result of the Rockefeller work it eventually will be. From the economic point of view hookworm disease has, during the last 50 years, caused practically incalculable economic loss, though the remedy appears to be so simple. It is a matter solely of simple sanitation and one capable of achievement if only the sufferers can be induced to realise the importance of rudimentary hygiene. But who is there who will point a finger at the habits of the American "poor white" or ignorant negro when there exist in our own enlightened country evils almost as gross, in the shape of "privy middens" and "stable dumps," which are still permitted to exist in the centre of some of our larger towns.

THE FELLOWSHIP OF THE ROYAL SOCIETY.

ALL the names recommended for election to the Fellowship of the Royal Society are of moment to those who are watching the progress of modern medicine, since practically all the sciences have been enlisted in its service. Especial interest, however, attaches to the choice, year by year, of Fellows from among those who are devoting their lives to the direct study of the structure and function, whether normal or pathological, of the human body, and of the diseases to which it is liable. Physiology is honoured this year in the person of Dr. C. Lovatt Evans, professor of physiology at St. Bartholomew's Hospital Medical College, whose work on the hydrogen-ion concentration of body fluids and on the utilisation of sugar by the heart has had a profound bearing on our knowledge of pathological processes. The dry bones of anatomy have been given fresh life by the comparative researches of Dr. F. Wood Jones, professor of anatomy at the University of Adelaide, who has made clear the phylogenetic history of many human organs. Dr. E. Mellanby, professor of pharmacology at Sheffield, is known chiefly for his exhaustive experimental researches into the ætiology of rickets; the whole science of dietetics has been profoundly influenced by his work. Dr. J. A. Murray, director of the Imperial Cancer Research Fund, worthily represents pathology in the list. For 20 years he has been engaged in initiating, organising, and consolidating the experimental study of cancer, and it is due largely to the high tradition inspired by his unobtrusive work that the laboratories of the Fund have acquired fame. We offer cordial congratulations to the recipients of a coveted honour.

TREATMENT OF GONORRHŒA BY CATAPHORESIS.

THE cataphoretic application of colloidal silver in the treatment of gonorrhœa was discussed over a year ago at the War Section of the Royal Society of Medicine,[1] when Major A. T. Frost reported on the promising results he had obtained by this method in some 107 cases. Since then a considerable amount of research has been carried out on the microscopical study of the behaviour of the gonococci and leucocytes under the electric currents—a line of research which was suggested by Sir William Leishman—and at a recent meeting of the War Section Major Frost demonstrated the outcome of this work and described in detail the treatment at present used by those who are investigating the cataphoretic method. Many disappointments have been experienced, but the system of treatment for anterior urethritis which is at present employed has achieved a high percentage of cures.

The method as described by Major Frost is as follows: The patient, on entry, is treated with daily vaccine injections, 5, 10, 15, or more millions, with a daily increase, but not to the extent of developing a negative phase. When he undergoes the cataphoretic treatment the patient is seated on an electrode, a square of copper gauze, wired

[1] THE LANCET, 1923, ii., 1134.

to the circuit, and shaped to fit the perineum very accurately, covered with lint which has been well boiled in distilled water to wash out any electrolyte; to this lint is connected the 1-inch bandage, also well boiled in distilled water, with which the penis is carefully bandaged. The urethra is washed out, first, with 0·2 per cent. lime-water, to dissolve away the mucus, then with distilled water, to remove electrolyte, and then into the bladder is injected some 200 c.cm. of chemically prepared silver colloid, made with trebly distilled (pH 5) water, and made alkaline (pH 7 or 8) with NaOH solution, 0·13 g. to the litre. A glass nozzle is adjusted to the meatus; it carries within it a platinum electrode. The urethra is filled with the silver colloid solution, but instead of an alkali, gonococcus endotoxin, the equivalent of half-a-million gonococci to the cubic centimetre is introduced. Through this system is passed a current (which must not cause pain), probably of 90 to 100 volts, and 2 milliamps.

For the first ten minutes the lower pad is negative, and the pole in the nozzle positive. The gonococci are attracted out of the tissues along with the leucocytes, and they adhere to the positive pole, from which they may be recovered and microscopically identified later. The colloid is attracted to the negative pole, that is, into the tissues, which it permeates to a depth of 1 mm. or even 2 mm. After ten minutes the current is reversed, and for the next ten minutes the colloid is changed by the hydroxyl ions streaming out of the tissues. The change in pH and the lessened specific gravity of the solution kill the gonococci, and cause the leucocytes to swell. The destroyed gonococci and cells now try to push their way into the tissues, where, being dead, they are thought to raise immunity. This treatment is repeated daily for two or three days.

The interest of this method lies in its direct attack on the gonococcus, the cause of the trouble. It is conceivable that this method of direct attack may prove useful in other diseases, and we await with interest the publication at length of this paper in the journal of the Society, with a full account of the necessary safeguards.

HUMAN MILK IN COMMERCE.

A WELL-KNOWN student of pathology recently produced for analysis what seemed to be a singularly original dream. He had dreamed that, along with an enterprising friend, he had engaged in the manufacture of cheeses, and had put upon the market a small flat article which at once took the fancy of the cheese-eating public and sold in prodigious numbers. He and his collaborator left a life of studious penury for one of affluent ease, constantly cheered by the sight of their cheeses in every shop window. But at the height of their prosperity the pages of the daily press explained to horrified millions that the cheeselets so dear to them were made from human milk; public opinion was revolted and the makers had to fly the country. The meaning and interpretation of which may be left to the psychologists. But it is worth the notice of the telepathists that this dream was dreamed just about the time when the *Journal of the American Medical Association* was printing in Chicago a most interesting article by Dr. B. R. Hoobler, of Detroit, on the commercial production and distribution of human milk in that city, where, as THE LANCET mentioned lately, every nurse has her own bathroom. For the past ten years in connexion with the bureau of wet-nurses an organisation has existed there for collecting and distributing human milk. Carefully selected mothers supply clean milk to the bureau at a flat rate of 10 cents an ounce; in 1923, 63,722 ounces were so supplied, and mothers have earned as much as £700 in one lactating period. The milk is disposed of partly to patients who pay from 30 to 10 cents an ounce, to institutions who pay 8 cents, and to poor patients who pay nothing; the supply is normally greater than the demand, and the excess each day is distributed free of charge to hospitals caring for sick and premature infants. The turnover is about £2000 a year, and the organisation occupies quarters in the Women's Hospital and Infants' Home, of which it is an integral part. There is, of course, no panacea for the many idiosyncrasies of babies who quarrel with their food, but this sort of provision must necessarily do much useful work in getting a certain number of infants over the rough places which they meet so often, and it is little remarkable to read at the end of Dr. Hoobler's account that electrical milking machines are to be installed.

A SUPRACLAVICULAR PROTUBERANCE IN PLETHORA.

Two years ago Prof. C. Trunecek, of Prague, published his theory of vascular hypertension, according to which all cases of this condition may be attributed to one of two primary changes, either a diminution of the vascular capacity or an increase in the quantity of blood. In the first case the contraction of the peripheral arteries causes anæmia of the skin, and hence hypertension; in the second variety, on the other hand, the increased vascular content causes distension of the vessels, especially of the capillaries and veins, which results in turgescences of the skin and numerous membranes. Prof. Trunecek now draws attention [1] to an anatomical peculiarity in this second variety which, from its constant and obvious presence, furnishes a characteristic symptom of plethora. Normally, the clavicle forms a slight prominence and the supraclavicular fossa, more marked in children and young adults, tends to diminish and gradually disappear with increasing years. Some individuals in this region show, in place of a fossa, a manifest protuberance which, in many instances, rises very markedly above the upper border of the clavicle. At the same time, the skin and visible mucous membranes are hyperæmic and turgid, the arterial pulsation hard and full, the veins and capillaries distended like the arteries, which usually appear normal in structure and feel. The area of hepatic and splenic dullness is enlarged, the number of blood corpuscles increased, and the blood pressure high. The complex of these symptoms constitutes the clinical picture of plethora, and the supraclavicular prominence is a feature of plethora. When it is small, it appears as a round or oblong mass, and when more pronounced has the form of a swelling, flat-topped and often unequal on the two sides; smooth, soft, elastic, and mobile. Percussion over the protuberance gives a dull note, and this characteristic distinguishes it from the bilateral prominences often met with in cases of pulmonary emphysema, the plethoric swelling being formed of turgid and dilated veins and capillaries which, in the supraclavicular triangle, are only feebly protected by soft tissues. The supraclavicular protuberance is of considerable importance in the diagnosis of plethora, since it is the most prominent symptom of excessive fullness of the vascular system; it has, moreover, the advantage of being easily recognisable, while other pathognomonic symptoms of this condition, although not less certain, require for their recognition much more time and clinical experience. It is also a valuable symptom for prognosis and treatment. It is a fact that in some patients who have the supraclavicular swelling the arteries are soft and the plethora not extreme, but when these same patients are seized with some acute disease, such as pneumonia or pleurisy, they are in real peril owing to the excessive quantity of blood in the pulmonary vessels and danger of acute pulmonary œdema. In such cases the excrescence, Prof. Trunecek holds, is an infallible sign which indicates the danger and points to an efficacious treatment. With the object of lessening the quantity of pulmonary blood as swiftly as possible, nothing is more efficacious than a copious bleeding, which,

[1] La Riforma Medica, Nov. 10th, 1924, vol. xi.

however, would be dangerous in patients with arterio-sclerosis, on account of the cerebral anæmia it may produce. It is therefore safer, according to Prof. Trunecek, to apply cupping glasses over the chest, which procedure, although abstracting a smaller quantity of blood in comparison with phlebotomy, has the advantage of drawing the blood in the lungs directly towards the surface, the veins and capillaries of the thoracic wall being in direct communication with the pulmonary vessels. The supraclavicular swelling may be seen to become smaller under this treatment, as it does when cachexia supervenes in such patients, in which case, on the other hand, it is of unfavourable prognosis. The supraclavicular protuberance often occurs during various chronic diseases, such as obesity, nephritis, alcoholism, and especially arterio-sclerosis, but in whatever malady it develops it constitutes a sign that the vascular system contains too much blood. A similar condition has been observed by H. Senator in splenomegalic erythrocythæmia, Vaquez disease, in which the protuberance is generally more marked on the right side. In the hypertension associated with narrowing of the smaller arteries, even when in an advanced stage, the supraclavicular prominence is not, as a rule, present. In plethora it must be considered as a phenomenon having as its object the restitution of the equilibrium the organism has lost by reason of the excess of blood in the vessels and the accumulation of it in a harmless position, Nature thus sparing regions more active and more important.

PROGRESS IN COMBATING VENEREAL DISEASE.

A JOINT deputation of the National Council for Combating Venereal Diseases and the Society for the Prevention of Venereal Disease will be received by the Minister of Health on March 3rd. The object of the deputation is to urge the Minister to give effect to the recommendation of Lord Trevethin's Committee "that the law should be altered so as to permit properly qualified chemists to sell ad hoc disinfectants, provided such disinfectants are sold in a form approved and with instructions for use approved by some competent authority." Sir Auckland Geddes will head the deputation. In this connexion the Ninth Annual Report of the National Council for Combating Venereal Diseases, which covers the period June 1st, 1923, to May 31st, 1924, deserves careful reading. Opening with a warm tribute to the work of Sir Malcolm Morris, who devoted his time and abilities during the last years of his life to promoting the N.C.C.V.D., it is shown how for the past ten years the Council has entered into an intensive campaign in furtherance of treatment for those infected with venereal disease and has been engaged in enlightening the public on the need for those who have been exposed to the risk of infection seeking and continuing treatment until all danger is passed. Efforts have also been made to secure a broader outlook from parents and teachers towards problems of sex, that the rising generation may obtain clear and simple teaching on the facts of life, and great endeavours have been made to give practical effect to the Trevethin Report. In spite of the limited powers of local authorities to incur expense on public health propaganda progress has been made here by arranging public health campaigns in which the subject of venereal disease is dealt with as a part of a programme which includes such subjects as infant welfare and tuberculosis, and the National Council equipment may be used for this purpose on the payment of a small fee. The international aspect of the Council's work is proved by the success of the Colonial Commissions which were despatched in 1920,[1] for proposals have now been made that similar travelling bodies of experts should visit the Provincial and State Governments of India, Egypt, and certain of the Mandated territories. There are now 18 countries represented on the Union Internationale, and the Minister of Health has appointed Colonel L. W. Harrison to attend as an observer at the meetings of the Union for the purpose of giving information on technical matters. Statistics show that venereal diseases in this country are on the decrease. The total number of new cases in England and Wales presenting themselves for treatment at the official treatment centres in 1920 amounted to 105,185, while by 1923 they had fallen to 73,613. The syphilis cases have fallen from 42,805 in 1920 to 23,927 in 1923, and the gonorrhœa from 40,284 to 30,908. While there seems to be some evidence that many who expose themselves to the risk of infection seek early advice—over 17,000 people not suffering from venereal diseases presented themselves at the clinics—it is unsatisfactory to note that there is a grave discrepancy between the number of women and men coming under medical care. In countries where a comprehensive following-up system has been found possible there is no such discrepancy, and presumably a large number of married women in this country who are suffering from gonorrhœa are unaware of their condition and are not receiving treatment. In may be noted that the fall in the syphilis figures in this country corresponds with a similar fall in other countries where facilities for treatment are provided. The Report is published at 102, Dean-street, Oxford-street, London, W. 1.

[1] See THE LANCET, 1920, ii., 1276.

LOCAL ANÆSTHETICS.

THE use of local anæsthesia in dentistry in this country far outrivals its use in surgery, though there are signs that surgeons are becoming more alive to its advantages. In the majority of dental cases, at any rate, the operator can be assured of a satisfactory loss of sensation. There are, however, certain minor disadvantages, such as after-pain, swelling of the tissues, and toxic symptoms, which occur sufficiently often to detract somewhat from the value of this method from the patient's point of view. The toxic symptoms are of varying degree, sometimes serious but more often only unpleasant. It goes without saying that a competent knowledge of the anatomy of the fifth nerve and of the technique of injection is a qualification essential to every dentist who performs a local or, still more, a regional injection. While the chief element in local anæsthesia is the anæsthetic drug used, it is becoming widely recognised that the vehicle in which the drug is given and the presence of adrenalin, which is generally combined with the anæsthetic, are factors of great importance. Moreover, the pharmacology of the whole solution must be taken into consideration. The paper read by Mr. F. N. Doubleday before the Odontological Section of the Royal Society of Medicine on Feb. 23rd, which is reported on p. 437 of this issue of THE LANCET, is one of the most important contributions to the science of local anæsthesia which has been made in this country. It represents a large amount of original research and embodies findings of great interest. Mr. Doubleday's work was chiefly carried out on frogs and appears to cover almost the whole range of the subject. There has been much discussion on the toxicity of the various drugs employed. Experiments to determine the lethal dose of the different anæsthetics have shown that cocaine, though the most potent, is also the most toxic. The dose used in dental operations is not generally one which should be dangerous even though cocaine be used, although fatal accidents have happened and toxic symptoms of a disquieting nature have often occurred. Since it is the invariable rule to use adrenalin in order to limit the extent of anæsthesia as well as to intensify its action, it has been argued that the toxic symptoms may well be due to the adrenalin rather than to the cocaine or novocaine. Mr. Doubleday found that an anæsthetic dose of either novocaine or cocaine without adrenalin did not appear to have any effect on the action of the heart

over many hours. A large number of cardiac tracings were shown which proved this point. But if adrenalin to the amount of 5 minims of a 1 in 50,000 solution was added, the effect on the heart's action was remarkable; action became slower and diminished in intensity until there was a failure of auricular contraction. Some experiments were carried out to ascertain whether it was possible to add a cardiac stimulant to the solution to counteract the depressing effect of the adrenalin. Neither caffeine nor strychnine had any effect. The addition of atropine, however, completely overcame the effect of the adrenalin, so that the action of the heart after injection was hardly affected. It is generally taught that the medium in which the anæsthetic is dissolved should be isotonic with the blood, and it is customary to dissolve the drug in Ringer's solution; but in order to ensure sterility of the solution it is desirable to boil it, and this must destroy the isotonicity. It is probable that the solution as injected is usually hypertonic. Mr. Doubleday showed by means of blood-films the crenation of the corpuscles that follows a hypertonic injection, and he suggests that such an injection may be one cause of after-pain. He recommends as a solution 50 per cent. of Ringer with an equal amount of tap-water. He finds that this solution is isotonic after boiling. This difficulty might be overcome by using ampoules of prepared solution, but there is the disadvantage that the solution would then have to be used cold; and experiments on frogs seem to suggest that a solution at body temperature causes less discomfort than a cold solution. In making a mandibular injection it is regarded as important to avoid injecting the solution into the internal pterygoid muscle, since this also is supposed to be a cause of after-pain. There would seem to be good grounds for this belief. Mr. Doubleday showed slides of muscle into which an injection had been made; the effect of the injection was to cause separation of the muscle-fibres and this might well account for the pain which sometimes follows a mandibular injection. In Mr. Doubleday's experiments the injections were made into connective tissue and not direct into the venous system. As he pointed out, in dental injections the needle is passed into connective tissue and only by accident into a vein. The absorption must be less rapid under these conditions, and these experiments therefore conform more to the actual practice of local anæsthesia in dentistry than experiments which have been made on the effects of adrenalin and other drugs by direct injection into the blood-stream. It would be unsafe to apply Mr. Doubleday's findings on a cold-blooded animal like the frog directly to such different conditions as obtain in man; yet the thoroughness with which they have been carried out, and the wide range they cover, renders his contribution highly suggestive for further research.

SECRET REMEDIES FOR FOOT-AND-MOUTH DISEASE.

THE Minister of Agriculture was asked recently in the House of Commons whether his attention had been called to Dr. John Shaw's remedy for foot-and-mouth disease which had been tried in this and other countries and proved successful; and if not, whether he would give immediate instructions to his department for an official test. Mr. E. Wood replied: "I am aware of claims made in regard to the efficacy of Dr. Shaw's remedy, and I have decided that this particular remedy shall be tested officially." We believe that the composition of the remedy in question is secret and that it has also been advocated by Dr. Shaw not only as a preventive and cure for foot-and-mouth disease in animals, but also for other diseases—e.g., influenza, for which it was originally devised. It is called by its author a "serum" and is administered parenterally. There appears to be no a priori reason for testing this remedy in preference to the other thousand and more proprietary medicaments which are continually being pressed on the notice of the official veterinary service by more or less interested advocates. The alleged trials abroad of this particular "cure" have never been substantiated by reports of properly controlled experiments. It so happens, however, that an experiment has already been carried out in this country by a farmer who subjected his stock to prophylactic inoculation with Dr. Shaw's "serum," but nevertheless experienced an outbreak of foot-and-mouth disease among the same cattle eight days later. Any reasons which may exist for expending the time of the staff of the Ministry of Agriculture in testing this remedy do not appear to be supported by veterinary or other scientific evidence in favour of its claims. It seems rather that the Ministry must have yielded to the importunate pressure of ill-advised agriculturists who, dreading the disease, have been induced by high-sounding promises to turn their attention in this unprofitable direction. Now that serious scientific investigation of foot-and-mouth disease has been set on foot in this country and that there is a good prospect of the whole question of prevention being investigated from a broad and scientific point of view, it is unfortunate that delays should be introduced and recourse had to guesswork. It must be remembered that effective trial of this or similar secret remedies must inevitably hinder the serious research work now in progress. Members of the medical profession are usually well aware of the ethical disadvantages and almost invariably futile nature of secret remedies, and are therefore able to sympathise with the troubles of their veterinary brethren in this respect.

WE are happy to record a continued improvement in the condition of His Majesty the King. It is understood that no further bulletins will be issued.

WE regret to announce the death at Salcombe, Devon, at the age of 79, of Sir Thomas Edward Thorpe, Fellow and former Vice-President of the Royal Society, a past President of the Chemical Society, and famous all over the world through the Dictionary of Applied Chemistry.

FROM Ireland comes the news of the death of two leaders of the profession, Dr. George Sigerson, professor of biology in University College, Dublin, and Dr. Alfred Smith, who was professor of midwifery in the same College.

THERE will be a contested election in the representation of the Faculty of Medicine on the Senate of the University of London, and Sir G. Lenthal Cheatle, who is standing as a candidate, has circulated the reasons why he considers that there should be opposition to the sitting member, Sir Holburt Waring. Those reasons are based on Sir Holburt Waring's favourable attitude towards the recommendations in the Haldane Report. Sir Lenthal Cheatle objected to the concentration of the University on the Bloomsbury site, and to any changes in the Faculty of Medicine which might place all the medical schools, save those becoming "constituent colleges," in a disadvantageous position. Further, the circumstances in which a new degree in Pharmacy has been created are considered by Sir Lenthal Cheatle to be derogatory to the Faculty of Medicine, and in his circular he pledges himself, first, to oppose the Haldane recommendations root and branch, and, secondly, to support the authority of the Faculty of Medicine on every occasion. He is nominated by Mr. Victor Bonney, Sir Charlton Briscoe, Mr. Herbert Clogg, Sir Thomas Crisp English, Mr. Percy Legg, Dr. Willoughby Lyle, Sir Humphry Rolleston, Dr. Arthur Whitfield, and Sir Almroth Wright. The election takes place in the University of London at 5 P.M. on Tuesday next, March 3rd.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXI.—LOBAR PNEUMONIA.

IN the treatment of a self-limited disease such as lobar pneumonia, the nursing and general management of the case are of greater importance than the exhibition of drugs. At present, however, the help which is afforded by drugs in the symptomatic treatment of the disease is apt to be somewhat underestimated, in part no doubt due to a healthy reaction from the days of the so-called "heroic" treatment by blistering, bleeding, tartar emetic, &c., and in part due to the search for purely specific remedies, such as anti-sera or vaccines. Treatment by specific anti-sera is effective only against infections with the pneumococcus belonging to Group No. 1, and since these constitute only some 33 per cent. of all cases, it is obvious that, in the treatment of the majority of cases, we must depend on general or symptomatic measures.

The researches published in recent years from the Rockefeller Institute have shown that virulent strains of the pneumococcus can be recovered frequently from the mouth and throat of cases convalescent from pneumonia, and from those in attendance upon or in contact with them, whereas they can be recovered only rarely from non-contacts. The possibility that pneumonia can be disseminated by carriers should therefore be kept in mind and a careful prophylaxis instituted. The patient should be isolated in a room by himself and visitors prohibited. Particular attention should be paid to the frequent cleansing and disinfection of the mouth. The throats of all contacts should be swabbed, and if pneumococci are found, appropriate disinfectants, such as liquor thymolis diluted 1 in 10, prescribed. Sputum should be expectorated into a sputum cup containing 1 in 20 carbolic acid, or into paper handkerchiefs which can be burnt. After convalescence the room should be thoroughly disinfected, and the bedding sterilised, as in the case of any other infectious disease.

The room should be thoroughly well-ventilated and kept at a moderate temperature of 60-65° F. Nursing in the open air in this country does not seem advisable, more especially in elderly or debilitated patients. The initial rigor of pneumonia has so impressed the lay mind with the idea that the disease is due to chill that most patients are made unnecessarily uncomfortable by an excess of both bed-clothes and underclothes. A light flannel jacket, opening down the front, is ample, and allows the necessary examination of the patient without discomfort or fatigue. After the diagnosis has been made the patient should be disturbed as little as possible by physical examination. The heart and front of the chest can be examined without causing any discomfort. He should be allowed to assume the position in which he is most confortable, but, if very ill, the position should be changed from time to time to avoid congestion of the bases. Even if the temperature is not unduly high, tepid sponging twice a day, if skilfully carried out, is comforting. When the temperature exceeds 103° F., tepid or cold sponging is repeated more frequently, and where the range of temperature is still higher, and there is danger of hyperpyrexia, sponging with iced water and the application of cold compresses to the thorax and abdomen should be carried out.

At the commencement of the disease the bowels should be thoroughly evacuated by calomel, gr. ii. to iii., followed by a morning saline aperient. Throughout the course of the disease constipation must be avoided by the regular use of salines or other aperients. In many cases abdominal distension is a distressing symptom, which is best relieved by the use of turpentine stupes, turpentine enemata, and the passage of a rectal tube. Where the distension is severe, small doses of pituitrin (½ c.cm. hypodermically) are useful.

The *diet* should consist mostly of milk and semi-fluid foods, such as arrowroot, cornflour, or the various prepared foods; fruit juices; custard; junket; soft-boiled eggs. Two or three ounces of sugar in the 24 hours is a valuable addition to the diet, and can be given as lactose in the farinaceous foods or as glucose in the fluids. In children especially good plain chocolate is a convenient method of giving glucose. Home-made lemonade, prepared from fresh lemons and sweetened with glucose, is a palatable beverage, of which the patient should be encouraged to take two or three pints in the 24 hours in order to promote an efficient action of the kidneys. For the first 48 hours fluids only—milk, lemonade, beef-tea, fruit juices—should be given.

Relief of Pain and Cough.

The relief of pain and the procuring of rest and sleep are two of the most important principles in the treatment. For the relief of the pleuritic pain, linseed poultices, renewed every two or three hours, are effective, but when skilled nursing is not available the frequent changing of the poultices may cause considerable disturbance of the patient. The weight of the poultice, too, is a disadvantage, and in children especially may add seriously to the already embarrassed breathing. Antiphlogistine is therefore preferable, since it is equally effective in alleviating the pain, it is readily applied, and it does not require to be renewed oftener than once in 24 hours. The very painful, frequent, non-productive cough of the early stage of the disease should be controlled by a sedative linctus, or a preparation such as glyco-heroin, 1 drachm repeated as necessary. Many patients are allowed to become exhausted from lack of sleep, due to the frequent warnings against the use of morphia in this disease. The milder hypnotics, such as bromide, chloral hydrate, &c., may be tried, but they are generally ineffective, and opium or morphia in some form is necessary. Dover's powder in 10-grain doses is frequently successful, but if it fails, morphia, gr. ¼, combined with atropine, gr. 1/120, should be used hypodermically. In the later stages, where the toxæmia is very great and where there are signs of impending respiratory or cardiac failure, morphia is, of course, contra-indicated, but in the earlier stages lack of sleep is more dangerous than the use of opium.

Drugs have probably no effect in modifying the course of the disease, though it is customary to prescribe a simple diaphoretic mixture, such as one containing pot. cit., gr. x. to xx., liquor ammon. acetat., ℥i. to ii., syrup aurantii, ℥xx., aqua ad ℥ss. A combination of pot. iod. and creosote had a considerable reputation for a time, but many patients find the creosote nauseating, and it is very liable to upset the digestion. In view of the dense consolidation of the lung, it is difficult to see how drugs belonging to the expectorant group can have any beneficial effect.

Conservation of an Efficient Circulation.

In spite of the negative findings from the pathological side, most clinicians are agreed that, in fatal cases of pneumonia, the issue is decided in the greater number by failure of the cardiovascular system, either from right-sided cardiac failure or from failure of the blood-pressure-regulating mechanism, or from both, and for these reasons the main object of treatment is to conserve and promote by every possible means an efficient circulation. As pointed out by Levy,[1] aside from structural changes, the three factors which throw an added burden on the heart are (1) the impairment of the circulation in the pneumonic lung; (2) toxæmia; (3) anoxæmia.

[1] Levy, R. L.: Archives of Internal Medicine, vol. xxxii., p. 359.

Careful watch should be kept for signs of right-sided failure—e.g., an increasing cyanosis, weakening of the second pulmonic sound, slight venous stasis in the vessels of the neck, œdema of the lung bases, or a fall in the tension of the pulse and of the blood pressure. Digitalis is the most generally useful drug, and it should be used early before the signs of circulatory failure are present. Tincture of digitalis may be added to the diaphoretic mixture, or preferably given separately in 5 to 7 minim doses three times a day from the onset of the disease, increased to 10 to 15 minims, according to the necessities of the case. In cases of known cardiac disease, the larger doses are used from the onset; where cardiac failure is severe, digitalin gr. 1/100 should be used hypodermically or intramuscularly. Strophanthin gr. 1/100 may also be used hypodermically or intravenously, but only with caution in patients already under the influence of digitalis.

Falling blood pressure is always an ominous sign, and calls for more energetic stimulation of the cardiovascular system. Numerous drugs have been recommended—strychnine hydrochloride or sulphate gr. 1/60 to 1/30, camphor gr. ℞i. in olive oil, or caffeine gr. v. hypodermically every four or six hours. Strychnine has rather fallen out of fashion as a "cardiac stimulant," and is perhaps more useful in threatened respiratory failure. Latterly I have used adrenalin in preference to any other drug, giving it hypodermically in doses of ℥ v. to x. of 1:1000 solution every six hours for 24 to 48 hours before the crisis. Adrenalin is not recommended as a routine in all cases, but only as an emergency in those cases which show a falling pulse tension. Pituitrin ½ c.cm. may be used in place of or with the adrenalin.

Miscellaneous Points.

Where there are signs of œdema of the bases of the lungs, or where there is excessive sweating at the crisis, *atropine* is of very great value. It should be given hypodermically in doses of gr. 1/120 to 1/100, repeated if necessary once or twice. Atropine, like adrenalin, is an emergency remedy and should be used with caution.

The use of *alcohol* as a stimulant is still much in dispute, but the general tendency seems to be to use it less and less frequently. It seems to be beneficial in certain cases, particularly elderly and debilitated patients and in those habituated to its use, and may be prescribed in doses of 4 to 6 oz. in 24 hours. In young robust people one seldom has recourse to alcohol.

Oxygen has a considerable effect in relieving the cyanosis, but generally has little effect on the dyspnœa. Its use is indicated in those cases where early and marked cyanosis is present. In private practice it is usually given by means of a wide filter funnel, held close to the nose and mouth of the patient, or by means of an ordinary gas-bag, and the patient is allowed to breathe the oxygen for 10 or 15 minutes at a time, repeated every hour or so.

Venesection is frequently recommended but seldom practised. In the obese plethoric individual, with a full bounding pulse and marked cyanosis, the withdrawal of 15 to 20 oz. of blood at the beginning of the illness gives considerable relief to the symptoms. Later on in the disease it is indicated in any case presenting signs of right-sided cardiac failure. A mild delirium is not uncommon in many patients, preceding the crisis, but an active, noisy delirium occurring early in the illness adds greatly to the responsibilities of those in attendance on the case. Paraldehyde in doses of 2 to 4 drachms, repeated as may be necessary, should be tried. Constant observation is essential in all cases of delirium.

Specific Therapy.

Specific therapy has been successful so far only in cases infected with pneumococci belonging to Group No. 1. An anti-serum has been prepared against Group No. 2 pneumococcus, but has not been successful. The results, even against Group No. 1 infections, are much inferior to those obtained by the use of anti-sera in diphtheria. A specimen of sputum should be sent to the laboratory in order that the group to which the infecting organism belongs may be determined. A minute dose of the serum, 0·02 c.cm. of a 1:10 dilution is injected intradermically, in order to determine the patient's sensitiveness to serum. If the patient is sensitive, or if he has already received injections of serum for some other disease, he should be desensitised by repeated small doses given at intervals of half an hour, 0·01 c.cm.; 0·1 c.cm. and 1 c.cm. hypodermically. The serum should then be diluted 1:10 with normal saline solution raised to body temperature, and injected slowly. In ordinary cases the serum should be diluted with equal parts of normal saline solution. Large doses are necessary, as much as 100 c.cm. in the first 24 hours, and 40 to 50 c.cm. on subsequent days. A dose of 30 to 40 c.cm. of serum should be injected and repeated at eight-hour intervals. Serum treatment in this as in other diseases should be commenced as soon as the diagnosis and the type of infecting organism are established. The necessity for very large doses and for the intravenous route are serious drawbacks to the routine use of serum in private practice. Vaccines, whether autogenous or stock, do not appear to have any very beneficial result except in cases of delayed resolution.

In ordinary cases where cardiac or other complications have been absent, the patient should be allowed to sit up in bed a week after the crisis, and after another week may be allowed to get up. If feasible, he should be sent to the country for two or three weeks before returning to work.

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Special Articles.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(*Continued from p. 405.*)

IN the three previous articles a summary has been given of the official evidence on Medical Benefit, except in so far as it relates to the work of the Regional Medical Staff of the Ministry of Health and the Certification Rules. These affect both the doctors and the Approved Societies, and a summary will be given later before the evidence given by Approved Societies is dealt with. At this stage the official evidence on financial provisions and on Scottish questions is inserted.

FINANCIAL PROVISIONS OF THE ACT.

The official account of the financial structure and resources of the Act and of the accounting arrangements (Section D of the Appendix) was supplemented by the oral evidence of Mr. E. J. Strohmenger, C.B. (App. D. 2.) The moneys, consisting of accumulations of contributions, which constitute the permanent balances in the National Health Insurance Fund, belong in the main to Approved Societies, some 98 per cent. of the insured population being members of Approved Societies. In general the summary of the evidence which has been extracted will, therefore, relate to the funds of Approved Societies, the evidence as to the small percentage appertaining to the Deposit Contributors' Fund, the Navy and Army Fund, &c., not being of general interest.

* References to the official statement which has been issued as an appendix in four sections are given thus: Section A, para. 69, is shown as "App. A. 69," and references to the oral evidence thus—Q. 1369.

(Q. 2133–4.) The National Health Insurance Fund acts as banker for the societies, and also acts as a general clearing house for all financial transactions involved in the scheme. The disposal of all moneys in the National Health Insurance Fund is fixed by statute, and there are no funds which are available for other purposes. (App. D. 6–9.) The receipts of the N.H.I. Fund consist of the contributions paid by employers and employed, the State grants, which consist of two-ninths of the cost of all benefits and of administration, and the interest on investments. The payments out of the fund consist of (1) the sums necessary to pay cash benefits and to pay doctors and chemists and expenses of administration, and (2) the sums issued from time to time to societies for investment.

Contributions and Reserve Values.

(Q. 2137, 2374–81.) The flat rate of weekly contributions under the Act is the rate required for the ordinary benefits in the case of a boy (or girl) of the age of 16 on entering into insurance. If there is added the contribution of the State, the value of the 10*d.* paid by the boy of 16 and by his employer exceeds the value of his benefits; the State contribution in respect of all insured persons is really required in order to make everybody 16.

(Q. 2154–8.) A "Reserve Value" is a paper credit in respect of every person admitted to insurance over the age of 16. These paper sums are credited in the accounts of the Approved Societies and will be gradually liquidated over a long term of years out of the margin available from the contributions and interest on investments. The amount of these paper reserve values originally created was 65 millions, and when the contributions and benefits were increased by the Act of 1920 further reserve values, estimated to amount to 48 millions, were created.

Investments.

(App. D. 17.) The balances in the National Health Insurance Fund are in the first place temporarily invested with the National Debt Commissioners. Subsequently, one-half of any sum ascertained to be available for permanent investment by an Approved Society is transferable to the N.H.I. Fund Investment Account and is placed to the credit of the society in that account. As regards the remaining half the society may take one of three courses—viz., it may request the Department: (1) to pay over the amount to the society for investment in the names of its trustees; (2) to invest the amount in specified securities in the name of the Minister (in the case of England and Wales) on behalf of the society; or (3) to transfer the amount together with the other half, to the Investment Account in the N.H.I. Fund.

(Q. 2400.) Why is it that only one moiety of the money available for permanent investment is allowed to be invested by the Approved Society. The Act has fixed a moiety?—That is roughly the share of the contributions paid by the insured person.

(Q. 2288–2291.) The total cash resources of the scheme for England, Scotland, and Wales as existing on Dec. 31st, 1923, were £107,000,000. Of this sum £88,700,000 is the immediate property of Approved Societies, made up of £38,000,000 Investment Account, £40,000,000 their own investments, £9,700,000 in their current accounts, and about £1,000,000 working balance in societies' own hands.

A Windfall.

(Q. 2189–94.) The witness explained that in the account of stamps sold there were accumulations, in excess of the sum paid over to the Approved Societies, which had gradually mounted up to 5½ millions. The greater part of this amount he described as a windfall. It is paid into a special fund called the Central Fund, and under the Insurance (Cost of Medical Benefit) Act, 1924, there is a special charge on that fund for certain liabilities in respect of the cost of medical benefit. Part of the excess cost of medical benefit in the years 1924, 1925, and 1926 will be charged to that fund. At the end of 1926, when all the charges on the fund have been met, it will stand at £1,500,000 with, in addition, interest from the end of 1923, and is certainly adequate to meet its liabilities (that is, in the way of helping societies having deficiencies).

Q. If this special liability for medical benefit had not arisen and been thrown on the Central Fund, a problem as to the amount of that fund would have arisen later on, with which, I suppose, Parliament would have had to deal?—That is so. This large sum of money is wholly a windfall in any case. Q. In your view, have Approved Societies any proper claim upon it?—Practically none whatever. Q. It is absolutely a windfall?—It is absolutely a windfall.

An Impression of Considerable Complication.

(Q. 2129, 2351.) The Chairman at the outset had stated that the financial arrangements appeared to be highly technical and complicated. As to this, Mr. Strohmenger said that some of the arrangements were made in the interests of sound financial administration, but the whole scheme was really the scheme which Parliament had itself laid down.

(Q. 2360.) Asked whether the societies understood the essential features of the financial arrangements, the witness said:—

I think they know all things that they need know in the interests of their members. I should not like to say that every society really understands the whole of the financial structure of National Health Insurance. . . . The officials of the large societies of course have understood it perfectly, but I do not suppose the great bulk of Approved Society officials have a very intimate knowledge of all these mysteries, and I do not think they need have. The ordinary working Approved Society secretary who looks after his insured people and protects his funds knows, I think, quite as much as he need know. (Q. 2361.) And no great degree of simplification in the central finance of the scheme could be said to be necessary for the proper and intelligent administration of benefits by the agencies concerned?—I say that quite clearly.

(Q. 2437–8.) To those to whom ledgers are profound mysteries, there is an interesting piece of evidence with regard to the ledger work of the Approved Societies. The officials, especially of small societies, are in effect keeping a ledger without really knowing it.

We devised a scheme under which a book was given to them, arranged according to subject in columns. There was a specific instruction on each advice as to which column each entry should go into. The book really is a ledger; but instead of having a separate opening for each account, it has got columns in which the entries go. It helps the society, which has simply to look at its advices saying that a certain item should be posted in column 20, line 10, for instance. At the end of the year they simply add up the total of their entries and thus get their ledger balances.

This book gives all the material to enable a society to make up its benefit fund and to get the auditor's certificate.

The Cost of Medical Benefit.

(App. C. 142.) The cost of medical benefit has varied from time to time with the agreements entered into with the doctors' representatives with regard to the amount of the capitation fee and the sums to be allowed for mileage and with the arrangements in force in regard to the supply of drugs. The provisions of the Act at present in force (the National Health Insurance Cost of Medical Benefit Act, 1924) fix the charge for medical benefit at 11*s.* 10½*d.* per insured person. The total amount required in addition to the sum of 9*s.* 6*d.* provided by the Act of 1920 is 2*s.* 4½*d.*, and this is provided as follows:—

	s.	*d.*
(1) Out of the funds of Approved Societies, &c. ..	0	2
(2) Out of moneys in the Central Fund (as explained above) derived from the unclaimed balance of sums received from sale of National Health Insurance stamps	1	8½
(3) Out of interest earned on the proportion of insurance funds retained in the National Health Insurance Fund (Investment) Account beyond the prescribed rate credited on sums standing in that account	0	6
	2	4½

It would appear (Q. 1435–7) that this provision of 2*s.* 4½*d.* is a temporary provision, and that for the cost of medical benefit in the future in the absence of fresh legislation 9*s.* 6*d.* only will be available at the end of 1926. With regard to these provisions, Mr. Strohmenger said :—

(Q. 2238.) These financial provisions as regards medical benefit are, so far as the Ministry is concerned, extremely unsatisfactory. They constitute a serious defect in the general financial arrangements. Here you have what is really a limited provision for the payment of medical benefit and an unlimited liability. It is true that the payment to the doctors is fixed for a period of years from time to time, but there is always the risk that the time may come to review the bargain with the doctors, and to have a further liability for which you have no provision. . . . For the years 1924, 1925, and 1926, the Department made what they considered to be a very full estimate of the cost of drugs, but owing to the epidemic this spring the cost exceeded that estimate, and although I hope that, during the three years for which the Act of 1924 will run, the cost will be within the provision, at the same time it may not be, and it will be an acute embarrassment to the Department if it is not.

EVIDENCE OF THE SCOTTISH BOARD OF HEALTH.

A careful reading of the evidence given by Sir James Leishman, the chairman of the insurance side of the Scottish Board of Health, and the other official Scottish witnesses, fails to reveal any peculiarly Scottish problems which would appear to necessitate a separate Scottish administration. The contributions and benefits are the same throughout Great Britain, and Approved Societies operate in both countries. (Q. 1544.) Generally there is constant communication by letter, by telephone, by wire even, with the English Ministry; practically all documents are exchanged between the two departments; and there is a considerable measure of coöperation through the operations of the Joint Committee.

(Q. 1556.) The question whether a good deal of machinery was not thus required for the purposes of coördination, and also whether a certain amount of difficulty did not result from movements of the population, especially with regard to statistics, accounts, and valuation, Sir James Leishman said :—

Yes, there is some, but it is part of the price you have to pay for separate administration, and in my judgment the price is fully justified.

(Q. 1573.) Apart from the question of national susceptibility, do you think on the grounds of efficiency alone there is a case for separate administration in Scotland ?—I think so, but I may be prejudiced.

Separate Valuation.

The witness was asked why Scotland insisted on having a separate valuation for the Scottish members of societies, and he replied that it was an indication of what might be called the "Home Rule" position.

(Q. 1894.) Has anything been gained in these international societies by having a dual system of valuation ?—It is very difficult to answer that question. What we do know is that, putting the objection to uniformity on the highest plane, Scotland, on the whole, stands fairly well, and that, at all events, we have not lost anything while we have gained a certain element in our own self-respect.

The Friendly Society Movement.

(Q. 1764.) Before the days of the Insurance Act the Friendly Society movement, especially in the purely country districts, had not got such a firm grip in Scotland as it had in England. This appears to account in part for the fact that there are relatively not so many small societies in Scotland administering the Act as separate units. Although, as stated, not many problems peculiarly Scottish are dealt with in the evidence, the views of Sir James Leishman were ascertained upon various matters, of common interest on both sides of the Border, from which we make a selection.

Malingering.—(Q. 1617.) Are you satisfied now that malingering or over-generous certification is not a substantial financial danger ?—It is a serious part of the administration, but, as far as I can see, there is not a substantial financial danger.

Delay in Paying Benefits.—(Q. 1619.) While some societies are probably not so good as others, we could hardly say, viewing the position as a whole, and having regard to the fact that societies are spread all over the country, and to the fact that members are often in inaccessible places, that there could be any serious charge made of undue delay in paying benefits.

Insurance of Married Women.

(Q. 1663–1729.) Sir James Leishman was questioned at great length with regard to his opinion that married women were not an insurable proposition. He expressed himself as in favour, on the grounds of simplicity, of the view that a woman on marriage should be given some sort of surrender value. Sir Alfred Watson pointed out that a similar proposal when the Bill of 1918 was before Parliament was stoutly opposed by the representatives of Women's Societies.

(Q. 1679.) There was substituted for it the present arrangement under which a woman gets something equivalent to that surrender value in the shape of maternity benefit and a small weekly allowance for a short period of sickness ?—Yes, and also medical benefit.

(Q. 1702.) Is it really the considered view of Approved Societies responsible for administering the insurance scheme that rather than have the trouble . . . of administering these benefits they would offer the woman a bribe to get out ?—I would not put it in that way, not so bluntly as that. So far as I know the mind of Approved Societies—and I would rather this question was pressed home with them— . . . they would prefer that.

Sir James Leishman said that he was all for simplicity. A series of further questions, however, led to the following :—

(Q. 1729.) If you take an able-bodied young man, if he is at home you assume something is wrong, but in the case of a married woman you would not know whether it was anything more than spring-cleaning. Does it come to anything more than those two propositions ?—I think you have stated the case very well, if I may say so.

Maternity Benefit in Scotland.

(Q. 1965.) Maternity benefit in Scotland has been highly popular. Positive evidence is abundant that it has greatly helped mother and child, and there has been very little misapplication of this benefit. Complaints, however, have been received that in many cases too much of the money has gone to the doctor or midwife, but, even so, the mother and child have benefited by the skill and care thus obtained.

Medical Benefit.

Medical benefit has been found to work well, even under the severe difficulties and the restricted service made necessary by the war, and very little reliable evidence has emerged of neglect of duty on the part of insurance practitioners, or of any real ground for loose general charges of inefficiency. Dissatisfaction with a limited service and agitation for an extended and complete medical and institutional service must not be fastened on as a condemnation of the working of the Insurance scheme, but rather as an indication that it has resulted in increased appreciation of the importance of a further great development of medical services in the interests of national welfare.

Early Diagnosis.

An American critic has alleged that insurance doctors are mainly occupied in dealing with trivial ailments. In so far as that is the case it is testimony to the worth of the present scheme. The facilities for treatment which the Act presents to the insured have resulted in the insurance practitioner seeing disease in its earliest and most curable stages, when there is frequent opportunity to prevent the onset of disabling or fatal illness.

Need for Specialist Advice.

The witness quoted from the Fifth Annual Report of the Scottish Board of Health, 1923, as follows :—

There is a great diversity in the range of treatment given to their insurance patients by practitioners. The work done

by many practitioners is of the very highest quality, sometimes comparing not unfavourably with that of specialists attached to hospitals. . . . There is an urgent need for increased hospital accommodation for the insured. The fullest advantage is not always taken by the practitioners of the availability of specialist advice at these institutions.

Numbers of Doctors on the Panel.

(Q. 1972.) Out of 2175 general practitioners in Scotland 1790 are panel doctors. In the county of Fife all the general practitioners are on the panel. In Glasgow† 401 out of 670 are on the panel. In Dundee Burgh the proportion is 95 per cent. In rural areas, it may be assumed that most of the doctors are on the panel, and, indeed, in a single practice area it is almost inevitable that the doctor should go on the panel. In Edinburgh the figures are 160 doctors out of about 230 in general practice. Edinburgh, said the witness, was the place where the reaction in connexion with the agitation was felt most keenly in the medical profession owing to the number of consultants who were there.

Vaccination.

(Q. 1976.) The question of preventive treatment had been the subject of an interesting decision in Scotland by referees, who had come to the conclusion that treatment should cover—

all treatment of every kind which a person is entitled to receive from any general practitioner attending him in the ordinary way; in ordinary general practice prophylactic treatment for the prevention of sickness is given, and the only change effected by the Act is that the practitioner, instead of being recompensed by fees, is recompensed by the capitation grant.

The referees, having regard to the rapid advance in medical science, added a rider that the panel doctor is not bound to undertake prophylactic treatment of any kind which has not become a matter of ordinary treatment by competent general practitioners; with regard to the particular case submitted to them, they had no hesitation in holding that any general practitioner was able to revaccinate against small-pox.

Sizes of Doctors' Lists in Scotland.

(Q. 2023.) In counties 66 per cent., and in burghs 36 per cent. of the panel doctors have less than 500 insured persons each on their lists; 18·5 per cent. in counties and 16·4 per cent. in burghs have from 500 to 1000 insured persons; and 13·8 in counties and 34·2 per cent. in burghs have from 1000 to 2000 insured persons. Those with over 2000 number 1·8 per cent. in counties and 13·4 per cent. in burghs.

Cost of Drugs.

(Q. 2024–2062.) The Scottish chemists are paid at higher rates than those paid in England, but the total expenditure on drugs is about 3*d.* per insured person less. This was explained as being due to differences in the prescribing habits of the doctors in the two countries. Mixtures are renewed in England 5 times to 4 in Scotland; powders 6 to 4 and pills nearly 7 to 4. The dosages are different, and it does not necessarily seem to imply that more medicine is consumed in England. (Q. 2038.) The extra cost in England is explained by the fact that each renewal carries a separate dispensing fee and separate payment for the chemist's establishment charges.

(App. II. C. 19.) The chemists in Scotland have proved more difficult in regard to terms of remuneration because, unlike the English chemists, they had not so much new business under the Insurance Act. Generally speaking, in Scotland, before the Insurance Act, the doctor had dispensed his own medicines only in country districts in which there was no chemist. In England, on the other hand, dispensing by doctors had been widely prevalent and in certain districts it was the almost universal rule. The Insurance Act, by prohibiting doctors from dispensing medicines for insured persons, except in special circumstances, thus diverted into the hands of English chemists an increased volume of trade without conferring upon Scottish chemists an equal or corresponding advantage.

Medical Service in the Highlands.

(Q. 2119.) It is claimed that there exists in the Highlands and Islands of Scotland a combination of difficulties not to be found in any other part of the country. By means of a special Exchequer Grant—

the Board have been able to make considerable improvements in the medical service, not merely in supplying surgeons and specialists, but also in raising the status of the ordinary practitioner, for example, by providing him with a living wage and helping him with a motor-car to reach his patients. The total of the grant is about £42,000 a year, but . . . that covers payments for services rendered to other classes in the Highlands besides insured persons.

Extra Payments to Medical Men in the Lowlands.

(App. II. C. 25–34.) An Exchequer Grant of £65,000 is available for the Lowlands of Scotland for mileage and also to include special grants for necessitous districts. These special grants are paid under a scheme which provides funds for maintenance of doctors in isolated areas, for the maintenance of a motor-car, for dispensary provision, removal of patients to hospital and even, in a limited number of cases, for expenses incurred by the doctor in taking leave for the purpose of a short course of post-graduate study.

† The figures which are quoted were given in a note to Q. 1997.

REX *v.* BATEMAN.

ALL our readers know the successful issue of Dr. Bateman's appeal against his conviction last December, which resulted in the quashing of the sentence and the immediate release of the wrongfully convicted man. Most of us also know that these devastating occurrences in the life of a practising doctor bring with them both a train of heavy expenses and a temporary loss in professional earnings. Through representations made to us it has been found that the advocacy, from the first extended to Dr. Bateman's case in these columns, has met with the approval of the medical profession at large, and we may here say that the attitude of THE LANCET in the matter was entirely dictated by great professional motives. In our opinion from the first—and it was strongly supported by good authorities—Dr. Bateman's conviction was an example of the neglect in a court of law to give value to clinical evidence; and in a court of law, when malpraxis is in question, clinical evidence must always receive the greatest respect if injustice is not to be done. Thus juries have the right to expect that their attention will be directed, and directed prominently, to the places where clinical evidence might be expected to influence their opinion. This was not done in the case of Dr. Bateman, and the result of that case must lead to better things.

It has been felt that material assistance ought to be offered to Dr. Bateman in the present circumstances, when he has to meet the legal expenses of the appeal and to make good the deficits in his professional income. With that view we shall be happy to announce in these columns any subscriptions that may be received towards a "Bateman Fund," designed to defray the expenses which he has incurred and to assist him in temporary but very real need.

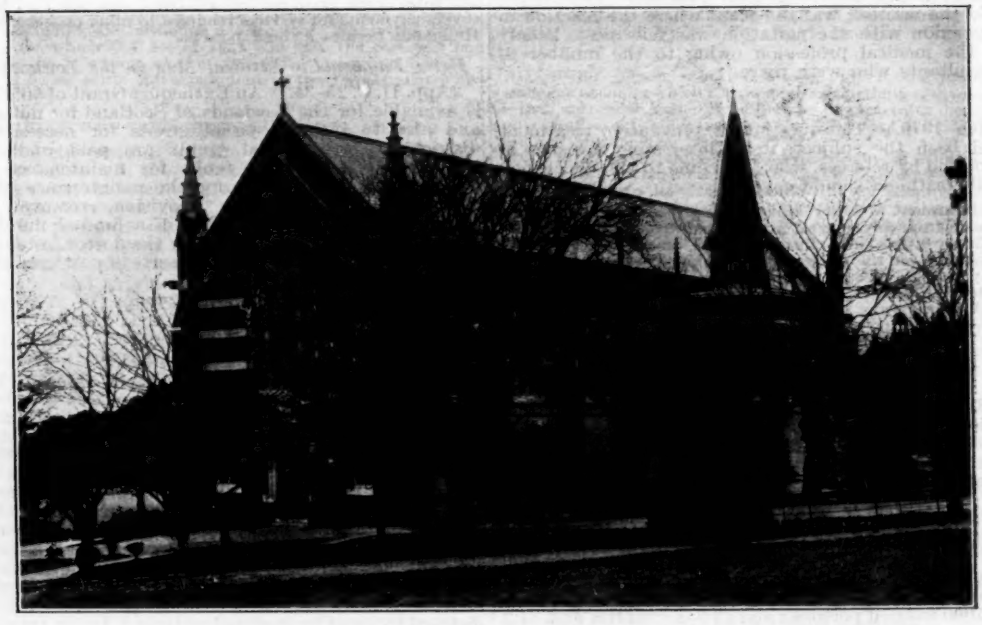
Remittances should be forwarded to the Manager of THE LANCET, 423, Strand, W.C.2, and made payable to the "Bateman Fund Account."

We have received :—

	£	s.	d.
The Proprietors of THE LANCET.. ..	250	0	0
Lieut.-Colonel Henry Smith, C.I.E., I.M.S.	5	0	0
Dr. J. Bright Banister	5	0	0

EPSOM COLLEGE WAR MEMORIAL.

IN 1895 the late Sir Arthur Blomfield presented his designs for the rebuilding of the old chapel at Epsom College, but because of lack of funds and other reasons, it was possible to build part only of the new chapel then planned. A new chancel was accordingly built and completed by the end of 1895. For 30 years the boys have used their chapel with its new chancel and old nave. The completion of the original plans has been eagerly awaited amongst all Epsomians past and present, and the Council, actively supported by the Old Epsomian Club, decided that no more fitting war memorial to the old boys who fell in the late war could be desired than the completion of the chapel. After six years of careful planning the new nave has been added to the chancel. Mr. Arthur Blomfield has been responsible for adapting and carrying out his father's original designs; the work has cost £11,500, of which £2000 remains to be collected. The chapel is built of red brick with Bath stone windows and dressings, and has a seating capacity of 650. The choir are placed in the chancel facing inwards, while the seating of the congregation differs from that in the old chapel, in that chairs are used instead of pews and these all now face the east. In addition there is a gallery at the west end. The whole of the heating and lighting systems are new, while the organ has been re-erected in a new organ chamber on the south side of the nave.



The New Chapel at Epsom.

On Saturday, Feb. 21st, in the presence of a large gathering of parents, relatives, and old Epsomians, the new nave was consecrated by the Bishop of Winchester "in memory of those from Epsom College who gave their lives in the Great War in the cause of Righteousness, Liberty, and Peace." The Bishop was attended by two past headmasters, Rev. T. N. H. Smith Pearse and the Rev. W. J. Barton, by two past chaplains to the College, Rev. J. M. Swift and Rev. J. A. Davies, M.C., and by Bishop Hook, the rural dean and vicar of Epsom the rector and curates of Lambeth Parish Church (where the school has its mission), the vicars of Christ Church and St. Barnabas, Epsom, and the two school chaplains. After the Bishop's procession had entered the chapel, wreaths were placed beneath the war memorial tablet by the head prefect, the second master, and the president of the Old Epsomian Club, and then the headmaster read the names of the 140 past students and masters, of whom the new nave stands a memorial to all who follow them. The Bishop's address—"The leaves of the tree are for the healing of the nations"—while reviewing the fundamental principles for which this and all war memorials stand, came chiefly as a message to the boys of the College, emphasising that it was for them to continue the work begun with such sacrifice by their brother Epsomians before them, that is, to work for the betterment of the world and the advent of universal peace. The service concluded with the "Te Deum," the "Last Post," and the National Anthem.

Among the large gathering present were Lord Dawson of Penn, Sir Ernest Goodhart, many members of the Council, and many old Epsomians, including Dr. Arthur Napper, who entered the school in 1855, the year of its opening. To the great regret of all, Lord Rosebery, the President of Epsom College, and Sir Henry Morris, Bart., were both unable to attend through ill-health.

It may be recalled that Epsom College has now entered upon its seventieth year. It is difficult to realise that its foundation pensionerships and scholarships, its present position, and the wonderful educational facilities it offers, could possibly be unknown to any medical man or woman, but judging by the unequal support accorded to it by the profession in general this must be so. During the last few years the numbers at the school have rapidly increased, and to-day there are 331 boys, and not one more can be fitted in anywhere; there is a waiting-list of over 400 names. As recently as last December [1] we supported the appeal made by Dr. Raymond Crawfurd,

[1] THE LANCET, 1924, ii., 1293.

chairman of the Council, in unqualified terms and nothing further need be said now, save that the visit to Epsom for last Saturday's ceremony proved that while its medical foundation remains the very essence of its being, the College is becoming generally recognised as a public school of high standing in the country.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Tests for Motor and Tram Drivers.

THE excellent motor-bus and tram service provided by the S.T.C.R.P. (Société des Transports en Commun de la Region Parisienne) could hardly be improved, but the directors of this concern never rest on their laurels, and are always seeking to add to the efficiency of their service. The latest innovation is the provision of a psycho-technic laboratory which was formally opened last month, and which is intended as a testing-house of the human machinery employed on the motor-buses and trams. The tests conducted at this laboratory resemble in certain respects those already in general use for prospective aviators; the reaction of would-be drivers to a variety of stimuli is studied under artificial conditions made to resemble as closely as possible those under which drivers will find themselves in normal circumstances. The tests are to be applied also to drivers who have had some mishap, and whose capacity to continue at work is questioned. In addition to purely dynamic tests—i.e., investigations of the muscular power and the fatigue response of the persons examined—a number of psycho-motor tests have been devised. The prospective driver finds himself seated on a motor-bus surrounded by handles and levers and confronted by a cinema film portraying as many vehicles and pedestrians as can possibly crowd together at one time on to the road. He is further confronted by red and green lights, noises of all descriptions, and his reactions to one and all of these stimuli are faithfully and mercilessly recorded—whether he presses the right brake, and, if he is a tram driver, rings his bell at the right moment, and does other appropriate things—and thus his capacity to thread the congested streets of Paris is judged. It is proposed that every driver shall undergo the tests of this laboratory at intervals of five years up to the age of 50, by which time he will, no doubt, be ripe for a less nerve-racking vocation. Considering that the company concerned possesses 1500 motor-buses and 2500 trams it is clear that this new psycho-technic laboratory will not be idle. In France it is hoped that a service of a similar nature will soon be provided for all motor drivers, amateur as well as professional, and that a means will thus be forthcoming for the elimination of the unfit driver.

Poison Gas and Tuberculosis.

At a conference on the respiratory sequelæ of poisoning by warfare gases, held recently at Val-de-Grâce, Prof. E. Sergent, of Paris, stated that poisoning by gas, in itself, was not sufficient to cause tuberculosis—a statement which was based on clinical observations, statistics, and experimental evidence. When an aggravation or a sudden recrudescence of tubercle is observed following poisoning by warfare gas, one must assume that there has been a reinfection of the injured lung by active and latent tuberculosis. When a late pulmonary infection appears in a patient who has been previously gassed, this cannot be laid directly to the account of the gas, but other general factors must be taken into account, apart from the gas, such as accidental reinfection or recrudescence through lowered resistance in the patient.

Anti-microbic Properties of River- and Sea-water.

A most interesting communication, from the hygienic point of view, was read on this subject to the Academy of Medicine by Dr. Arloing, professor of experimental and comparative medicine and of bacteriology at Lyons. From a study of the waters of the Rhône, the Saône, the Isère, the Brac, the Romanche, the estuary of the Seine, and the roadstead and harbour of Le Havre, he found that these waters had remarkable bactericidal properties with respect to certain organisms of the intestinal group. Dr. Arloing attributes these properties to a bacteriophagic and bacteriolytic action of the water, varying with its regional source. Thus the Rhône and the Isère have a marked antipathy towards the typhoid organisms, the Isère and other streams in the neighbourhood of Grenoble, including water from melted snow, having a particularly destructive action on paratyphoid A, while the waters at Le Havre are inimical to the *B. dysenteriæ*. The bacteriolytic effect on the *B. coli* is the most general, and this is found particularly in slow-flowing, impure water (Saône, Seine, and harbour of Le Havre). The anti-microbic action is usually more marked below than above an important locality. This bacteriolytic property, from its biological character, seems to be bacteriological rather than physico-chemical.

BUCHAREST.

(FROM OUR OWN CORRESPONDENT.)

Transplantation of Eyes.

SOME years ago a young Hungarian scientist, Dr. Koppanyi, created a stir by his claim to have transplanted eyes in vertebrate animals with such success that a certain amount of visual power was regained through the transplanted organ. Koppanyi demonstrated the results of his experiments at the Ophthalmological Congress held in Vienna in 1921, but the Congress was not prepared to regard his claims as proven. Further experiments along Koppanyi's lines were, however, sanctioned by the Congress, and one of the workers who undertook research in this field was a Transylvanian ophthalmologist, Dr. Nicholas Blatt. Dr. Blatt pursued his practical investigations for over two years, during which time he experimented upon over 600 animals, 400 fresh water fishes, 200 rabbits, and several chickens. In all cases the animals were narcotised before the operation. The most that can be said for the experiments is that anatomical healing took place in 26 cases among the 400 fishes, in 2 cases among the 200 rabbits, and in no case among the chicken experiments. He made some interesting observations on such phenomena as colour change in fishes when one eye had been transplanted, that is, for all practical purposes, in fishes blinded in one eye; but out of the sum total of the attempts made to re-create sight nothing of value to afflicted human beings emerged. A rather pathetic sidelight on his work is the fact that he had to hide himself away in a small and specially erected laboratory because, when the nature of his experiments was voiced abroad, hundreds of blind people flocked to him in the hope of receiving "new lamps for old."

Anatomical Cadavera in the Rumanian Universities.

The starting-point of the anti-Semitic feeling which has run high in the Rumanian Universities during the past two years, and has led to several very regrettable incidents, may be traced to the demand of the Christian medical students that Jewish medical students should be excluded from the classes of practical anatomy, except in so far as their dissections were limited to Jewish cadavera. This demand was rejected by the professors, but the attitude of the Christian students was so firm that, in order to ensure the peaceful continuance of regular studies, a compromise had to be made, in conjunction with the Minister of Public

Instruction, whereby it was decided that in future Jewish students might carry out dissecting work only if Jewish cadavera were available. When none were available the Jewish students must not themselves dissect, but they might watch the procedure. This regulation brought about a truce, but it did not put a stop to anti-Semitic demonstrations, which, indeed, have been so frequent that military patrols were stationed outside lecture-rooms to ensure a measure of peace among the students. The Minister of Public Instruction, Mr. Anghelescu, who considers the exclusion of Jewish students from the practical anatomy rooms to be unfair, recently held a conference to discuss the whole question of Jewish cadavera. As a result of the conference, the Minister of Public Sanitation has issued an order to all hospitals demanding that the bodies of all patients who die in hospital, unless they are claimed by relatives of a definite degree of consanguinity, must be placed at the disposal of the anatomical institutes without regard as to the nationality or creed of the deceased. This order also applies to provincial hospitals, and includes the conveyance of cadavera from such hospitals to university centres.

Epidemic of Hiccough in Transylvania.

For the past few weeks an epidemic of hiccough has been prevalent in Transylvania, and cases are reported from all the towns of the country. The cases are mild for the most part, and the onset is marked by slight fever. The symptom of hiccough shows itself on the third or fourth day, and lasts generally two or three days. In treatment, aspirin in fairly large doses has been the main stand-by, specific therapeutic measures having proved inefficacious. In some old subjects the fits of hiccough are very difficult to stop, but aspirin usually brings relief. No fatal case has as yet been recorded.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Hardships in the Medical Profession.

THE economic conditions prevailing in our country are weighing heavily on the medical profession. Not only is the standard of living quite different from that to which we were accustomed a dozen years ago (it is at least 50 per cent. lower as regards culture and outward appearances), but also the level of fees has dropped alarmingly. Eighty per cent. of the population belong to one or other of the different sickness insurance clubs, which cuts out many opportunities of private practice. The average income of a busy general practitioner in our city is about £25 a month—and that is a bare living wage. Only about 12 per cent. obtain £30-£40 a month, and not more than 2 per cent. have more than £80. Specialists as a rule have slightly higher incomes, but few earn more than £50, whilst £100 represents a flourishing practice. Under such circumstances—the cost of living here being about the same as in England—a large number of doctors have given up their profession and have become agents for surgical instrument factories, or for chemists or pharmaceutic concerns; many have taken up a purely commercial career.

Atypical Measles.

In a memorandum addressed to the practitioners in Vienna Dr. Friedjung draws attention to the fact that the type of measles occurring in the outbreak which has been present in our city for the past month is quite different from the disease described in text-books. On the whole, the decursus has been very mild, with few complications from the ears or the lungs. The prodromal symptoms are insignificant; now and then one notices a little redness or soreness of the throat, some cough, but no Koplik's spots. Then a violent and intractable cough develops, and the rash appears suddenly with high fever. At this stage, and not before, Koplik's spots appear. The disease then runs its regular rapid course, and the patients are soon well again. As there is concurrently in the city a fairly extensive epidemic of mild influenza, with similar bronchitic manifestations, one must be on the look-out. Many schools had to be closed temporarily on account of these conditions amongst the children.

The Water-Supply of Vienna.

The present unparalleled scarcity of snow and rain in the Austrian Alpine regions has caused a rapid diminution of the water-supply of the capital, which derives its water from two different districts of the Alps. The old waterworks, opened in 1885–87, comprise seven "eternal" springs at the foot of the Rax-Alp and the Schneeberg, two mountains about 60 miles to the south of Vienna. From this source Vienna used to obtain excellent water for about 1½ millions of people. The increase of the population necessitated the acquisition of new water sources. In 1910 the second waterworks were completed, embracing 22 springs, which derive their water from a distance of 120 miles to the south-west, and the combined supply was sufficient for about 2,000,000 inhabitants, giving each about 135 litres (280 pints) daily of pure water of medium hardness. But of late the average yield of the wells and springs has diminished, and the amount of water required daily per inhabitant has gone up. Plans are now being made to get a water-supply by means of artesian or other wells in the vicinity of the capital. Naturally special care will be paid to the quality of water to be added to the present supply. Already many physicians have noted an increase of goitre amongst the population. The general public believes that this is due to the Alpine water, as it comes from districts where goitre is endemic. And the coincidence of the use of the second waterworks and the increase in the incidence of goitre, especially amongst the females, is striking. When the present dry winter cut down the available daily quantity of water to about 110 litres and less per head, it served as a warning that the city could not rely on the Alpine springs alone. In keeping with modern ideas of hygiene and cleanliness, a daily average supply of 200 litres per head will be aimed at.

Final Settlement of the Conflict between Prof. Meller and the Hospital Board.

As I mentioned some time ago in a letter, a conflict had arisen between Prof. Meller, the chief of the ophthalmologic clinic and the board of the hospital and the Ministry of Health, owing to certain alleged grave obstacles placed in the way of scientific work. Public sentiment was definitely on the side of the professor, and he threatened to resign his chair and discontinue his lectures in the University. After some heated controversy an understanding was arrived at whereby the professor agreed to continue his teaching. The hospital board will no longer interfere with the administrative work of the clinic, and will not let monetary views interfere with the receiving of patients wanted for instruction or for other reasons by the teaching staff of the clinics.

BERLIN: INTERNATIONAL POST-GRADUATE COURSES IN MEDICINE.—A series of post-graduate courses at various hospitals will be held in Berlin in the spring, in conjunction with the Berlin Medical Faculty. The series will include the following: (1) Practical Course on the Diagnosis and Treatment of Syphilis, from March 2nd to 7th; (2) Practical Course in Diseases of the Digestive System and of Metabolism, from March 9th to 14th; (3) eight evening lectures on Important Points in General Medicine, during March; (4) Supplementary Course on Special Subjects in all Branches of Medicine, two sections (*a*) from March 2nd to 28th, and (*b*) March 16th to 28th; (5) Important Chapters in Social Medicine, from March 30th to April 5th; and (6) Special Course in Ear, Nose, and Throat, from April 20th to May 9th. Information as to lodgings, &c., and the full syllabus may be obtained on application to the offices of the International Post-Graduate Course, Luisenplatz 2–4, Berlin, N.W. 6.

Obituary.

THE RT. HON. SIR CLIFFORD ALLBUTT, P.C., K.C.B., F.R.S.,

REGIUS PROFESSOR OF PHYSIC, UNIVERSITY OF CAMBRIDGE.

THE whole of the medical profession will unite with us in regretting the death at the advanced age of 88 of Prof. Clifford Allbutt. He was the acknowledged leader of the profession in this country and had attained to this position by outstanding clinical experience, by an unrivalled knowledge of the literary side of our science, and by a wonderful ability to deal with men and things, as shown by his success in the tenure of high office, in academic teaching, and in practical politics. He died suddenly at 1 A.M., after 10 minutes' acute dyspnœa, on Sunday last in full possession of all his faculties and discharging with promptitude until the end his official duties at the University. Only three days before his death we received from him a communication, which will be found in our correspondence columns, showing how keenly alert he was to the salient points in any discussion in contemporary medical journals, and also displaying in its phraseology his unvarying intention not to overstate a case. He offers no explanation of the phenomena, but reports an empirical result, knowing that on the sum of such results explanation may follow. Throughout 65 years of professional work he always maintained a similar logical outlook.

Thomas Clifford Allbutt was the son of a Suffolk clergyman and was born at Dewsbury in Yorkshire and educated at St. Peter's School, York. From school he entered Gonville and Caius College in the year 1857 as a scholar and graduated in the first class of the Natural Science Tripos. From Cambridge he went to St. George's Hospital and while there graduated in medicine at Cambridge and held the usual resident hospital appointments. Shortly afterwards he took up his residence at Leeds, where his professional career was from the first an unqualified success. For while he rapidly made a name for himself in scientific circles, he also obtained a huge consulting practice, but managed to discharge at the same time, and zealously, his duties as physician to the Leeds General Infirmary, the Leeds Hospital for Women and Children, and the Leeds Fever Hospital. His reputation and his influence alike spread far into the north of England, and the seniors among us can still remember when his opinion was constantly quoted over a wide range of work as coming from "Allbutt of Leeds." As early as 1868 his share in the improvement of clinical thermometry was recognised as fundamental, and he has himself recorded what that share was. The first clinical thermometers were those of Casella, constructed for the well-known Prof. Aitken of Netley. But these were too cumbrous for general practice, and for this reason the thermometer long remained a stranger to the busy practitioner. Allbutt set to work with Messrs. Harvey and Reynolds to manufacture an accurate thermometer of a new form to be carried in a portable case, and in a paper by the late Prof. Sims Woodhead and Mr. Varrier-Jones, published in our columns about eight years ago, Allbutt's own account of his share in perfecting the device is given. The value of the new instrument in medical investigations was not recognised quickly, despite the advocacy of Aitken and Pridgin Teale, Allbutt's colleague at Leeds, but when the enormous aid to diagnosis furnished by the self-registering instrument was once perceived there was hardly a practitioner in the country who did not wonder how he had been able to dispense with it.

A second prime contribution to the technical side of scientific medicine was also made by Allbutt at an early stage of his career, for although no particular ophthalmoscope bears his name, no one man contributed so largely to the recognition of the value of the ophthalmoscope in the earliest days of its invention by Helmholtz. Fifty years ago, when the ophthalmoscope was a comparatively new instrument, many who employed it were too sanguine of the gains to accrue from the recently acquired power to see nerves and blood-vessels in such immediate relation with the brain. They saw that the instrument should pave the way to an improved diagnosis of cerebral affections, and the discovery of the forms of retinitis that depend upon renal or other remote disorder was hailed as sure to lead to advances not only in diagnosis, but also in pathology and therapeutics. But as time went on, these expectations became less confidently expressed, for it was apparent that the new page opened to clinical observation was not of the kind which he who runs may read. Persons unskilled in the use of the instrument, and unable to interpret the appearances that it revealed, not infrequently made and published serious blunders; they afterwards neglected the help they had misused. In the meantime a few patient workers toiled steadily on, collecting data, comparing evidence, and eliminating sources of error. Among these workers Clifford Allbutt was one of the most prominent, and at the proceedings of various medical societies and in our columns and in those of other professional journals he explained methodically the use of the ophthalmoscope, defining its range and annotating the phenomena made apparent by its use. In 1871 he brought all this work together into a connected volume which was the only existing general treatise upon its subject at the time. The book, which dealt with the use of the ophthalmoscope in diseases of the nervous system and of the kidneys in particular, but which took note of the employment of the new system in many general disorders, began with an emphatic and personal testimony to the value of the direct image in the recognition of early and slight changes, explaining the common sources of error in interpretation. An orderly account was then given of the variations from health of the optic nerve and the retina, while the relations between these variations and intracranial and other general disorders was closely discussed. The work was recognised from the first as full of sound reasoning founded upon careful observation, never carrying conclusions further than the facts would warrant, but bringing together all the facts as far as they could be ascertained to bear upon the questions at issue. The book was reviewed in THE LANCET just 53 years ago, and how much it was needed is indicated by the last words written about it, which were: "It will convince the most sceptical that the ophthalmoscope is an instrument no longer to be neglected as a means of diagnosis in general medicine." In the same year he read before the Royal Society a paper entitled the Effect of Exercise upon the Bodily Temperature, to which Society he was elected in 1880 in recognition of his original and scientific services to clinical medicine. In 1883 he was elected F.R.C.P., having in the meantime taken his M.D. at Cambridge, and in the following year he delivered the Goulstonian Lectures of the College, taking as his subject, Neuroses of the Viscera.

Allbutt remained at Leeds, working at the highest possible pressure until 1889, discharging his official duties, enlarging his private responsibilities, and resolutely informing his colleagues by papers, lectures, and addresses, dealing with an ever-expanding range of clinical subjects. It must be remembered here that consulting practice in Yorkshire 35 years ago was physically a strenuous affair if calls abroad were frequent from the outlying districts, and at length Allbutt had to confess to himself that he was overtaxing his strength. Many offers are known to have been made to him to return to London in various dignified capacities, but these he had so promptly refused that some surprise was manifested when at this time he accepted the post of Commissioner in Lunacy. This he held for three years, and his knowledge of affairs as much as his experience of the sick made of a wise and kind man a satisfactory official, but those who knew what were his aspirations fully endorsed the action of the authorities in choosing him

as successor to Sir George Paget as Regius Professor of Physic in the University of Cambridge.

At Cambridge, although well over 50 years of age and without any experience either as university professor or college don, he immediately took his place in the front of academic life. He had a remarkably flexible mind, which was readily appreciative of the work of others, a very necessary quality in a university professorship. He was also progressive in his views and untiring in keeping abreast with new work, and thus his big but exact store of information usually enabled him to standardise as important, or as interesting, or as negligible, with discriminating judgment; but his attitude towards all honest work was so invariably sympathetic that even when he felt unable commend the result he was often able to encourage the worker, and to indicate to him where his labours might bear fruit. (Hundreds of workers, some no longer young, will endorse this from personal experience.) Almost immediately after succeeding to his Chair he projected the scheme for a new system of medicine, whose outcome, more than his great clinical record, will keep his name alive. Accordingly in 1896 there began to appear the first edition of Allbutt's System of Medicine by Many Writers, dedicated to Sir Russell Reynolds, whose similar but very unequal system had fallen into disuse. The work was immediately triumphant, and the second edition, which we now all use, was issued under the editorship of himself and Sir Humphry Rolleston some ten years later. It would be difficult to estimate the benefit which the undertaking has been to medicine all the world over. To the System of Medicine Allbutt contributed considerably, writing the sections upon the history of medicine, on neuroses and dilatation of the stomach, on chlorosis, neurasthenia, and, most importantly, on cardiac diseases, overstress and functional disorders of the heart, and diseases of the aortic area. He also contributed a chapter on mountain sickness from the point of view of an experienced Alpine climber. From the inception of the undertaking he spared no trouble in maintaining the symmetrical form of the compendium, ensuring the authoritative nature of the contributions and watching over the literary style. The policy was continued with the second edition, and the scrupulous care was even perfected under the joint editorship of Allbutt and Rolleston. Those who have had occasion to look further into any subject than such a summarising chapter as in many cases is all that the best compendium need attempt to supply, will realise the unlimited aid which they obtain from the long list of references appended to most of the chapters, given in such a form that their verification is possible.

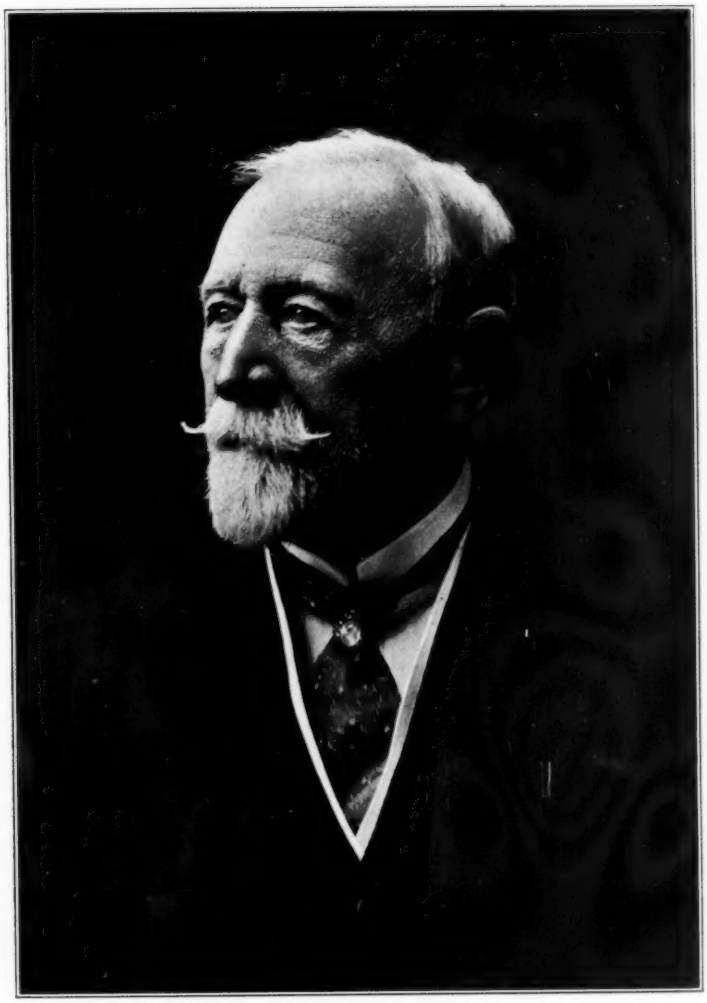
As was inevitable, his position at Cambridge made him an intimate observer of all phases of modern medical education, and his words on the proper place of the teaching of universities in the medical curricula were always weighty. He wrote on several occasions to these columns useful and pointed explanations of the need for the establishment of clinical units, foreseeing in them that blend of theory and practice which his whole life was spent in exemplifying.

To attempt a résumé of Clifford Allbutt's literary output would not only be difficult but unnecessary. For almost from the beginning of his career he was one of those who not only knew what he wanted to say, but knew what wanted to be said, so that his various addresses in a clinical or official capacity always possessed two qualities, apart from literary charm, which have ensured their recollection. In the first they were arresting from their topicality, but secondly they remained as sources of inspiration because of their broad outlook. Take, for example, such an address as that in medicine which he delivered at the annual meeting of the British Medical Association in Glasgow on the Classification of Diseases by Means of Comparative Nosology. From a wide range of reading and observation he indicated that the marshalling of diseases of men, animals, and plants on various bases of affinity must pursue at least four different methods of inquiry—the hereditary, the historical, the geographical, and the experimental—and although, under each of these headings, during the more than thirty years that have elapsed, subdivisions and refinements have made their appearance, the scheme laid down by Allbutt remains inclusive and fruitful, for the present interest in comparative pathology dates definitely from that address. Another example of the permanent utility of Allbutt's deliverances is furnished by his "Notes on the Composition of Scientific Papers." No doubt much writing on his own part, and certainly much editing of the writing of others, had revealed to him certain common pitfalls in English prose into which not only the careless or the ill-educated, but even industrious and learned writers might fall. Not since Dean Alford wrote "The Queen's English" has any more valuable guide to the art of writing and arranging written matter been published, and the practical value of the essay is proved by the fact that a third edition appeared only a few months ago. And a sidelight on the continuity of his interests is shown when he chose for the subject of the FitzPatrick Lectures at the Royal College of Physicians of London the subject of Greek Medicine in Rome. His words synchronised with the growing feeling that the bases of our ancient professional learning might be studied with advantage, not so much out of historical curiosity, but in order to show, for future edification, how systems and schools of thought arise, and how their votaries make good in some directions, and how the unimportant as well as the incorrect fall gradually away from the store of knowledge, leaving us what is valuable whereon to base future developments. It was along such broad and fundamental lines that Allbutt's mind ever worked.

To enumerate the degrees which Allbutt earned or received would require much space, if it were to be done in detail; but this is here unnecessary, so familiar are all our readers with the great position which he occupied. He was, we believe, the only medical man who was ever summoned to the Privy Council as a medical man. At the Royal Society he served on the Council as Vice-President; he was a D.Sc. in three universities, and an LL.D. in five; he held the honorary Fellowship of several Colleges and Academies; he was a K.C.B., and a Justice of the Peace for two counties. He had held examinerships at different times in the University of Oxford and the Royal College of Physicians of London, where he delivered, as has been said, the Goulstonian Lectures and the FitzPatrick Lecture, and was also Harveian orator. At the College he was at different times on the Council and a Censor. He was President of the British Medical Association in the strenuous days of the war and an honorary Lieut.-Colonel in the Royal Army Medical Corps. We do not exhaust the list of honours that might be enumerated, but no more emphasis need be laid on them. Throughout his life he grudged no man any success, so the wide recognition which his own services and gifts received was always felt by the medical profession as fitting. He was learned without pedantry, firm but even-tempered, courteous but unaffected, on occasion a good orator, and always an admirable talker, whose wit was unstudied and whose excursions into a diversified range of subjects were as often as not taken in order to exhibit the familiarity of others with these subjects.

Sir Humphry Rolleston, Bart., K.C.B., President of the Royal College of Physicians of London, writes:—

"A friend of my father, Sir Clifford Allbutt had for more than 30 years constantly helped me in innumerable ways, and his sudden death is an irreparable and unexpected break in the established order of things. For though he was in his eighty-ninth year he was astonishingly young for his length of days, the main or only evidence of age being deafness. In his full sympathy with the young and with fresh ideas and in his broad outlook he indeed compared favourably with many a man of half his years. Aristocratic in appearance and courtly in manner—somewhat resembling the great Lord Dufferin—he was the most approachable of men; obviously a great gentleman, he had indeed a génius for friendship, and I never



SIR CLIFFORD ALLBUTT

heard him speak ill of anyone, though he shrewdly estimated the points of character. Like Sir Henry Acland, the Regius Professor of Medicine at Oxford, he had a refreshingly wide and original outlook on medicine, and was more concerned with principles than details. Among his many activities reference may be made to two: his general influence on medical education and culture, and the special subjects in which he initiated advances. He was a scholar in the broadest sense, a profound medical historian, an omnivorous reader, and a persistent advocate of the need for a sound general education as the basis of medical training. With a highly critical literary taste, he was as careful in his own writings as he urged others to be in the choice and use of words. But he was far more than a scholar or a learned man, for his combination of wisdom, humanity, and versatility was of a kind that appears to be dying out in a world that has seen many changes in a comparatively short time. His public addresses were on broad lines and fearlessly independent. Thus, in the Goulstonian Lectures for 1884 he satirised the vagaries of the contemporary gynæcologist with a masterly touch, and later, in 1920, expressed his stern disapproval of the practice of psycho-analysis; while in the St. Louis address on the historical relations of medicine and surgery (1905) he insisted on the present artificial distinction between the surgeon and the physician. Since his address in medicine at the Glasgow meeting of the British Medical Association in 1888 he had urged the recognition of comparative pathology, and it is a happy outcome of his appeals that there is now an institute for this branch of research at Cambridge and a section for its study at the Royal Society of Medicine, of which he was appropriately the first President. No one could write more charmingly of others, as is shown to perfection by his introduction to the volumes dedicated to the late Sir William Osler (1919) and to Karl Sudhoff (1924) on their seventieth birthdays.

"He rapidly formed a sound judgment on new work, and was ever alert to welcome the germ of a real advance; thus, in his review (*Brit. Med. Jour.*, 1902, ii., 250) of the book on the pulse by the then little known James Mackenzie of Burnley he generously described it as destined to 'take a permanent place in the standard records of the subject.' It is indeed remarkable how many matters of now common knowledge in medicine he either originated or made more widely known, though in some instances his share therein has from lapse of time been perhaps naturally forgotten. For many years he described hyperpiesia—or, as he originally called it, senile plethora (1895)—and while so doing was largely responsible for the introduction of the sphygmomanometer into ordinary practice. His advocacy of the aortic origin of angina pectoris dated from 1894, and those who heard him speak after Prof. K. F. Wenckebach's lecture on angina pectoris and the possibilities of its surgical relief at the Royal College of Physicians on May 5th, 1924, were impressed with his mental and physical vigour. He was one of the first, if not the first, to describe syphilitic disease of the cerebral arteries (1868); he was the first in this country to record a case of tabetic arthropathy, a year after Charcot's description in 1868; and he early insisted on the effects of strain on the heart and arteries (1870), on the value of morphine in cardiac disease (1869), on the use of the stomach pump, and of the ophthalmoscope in medicine (1871). Together with the late Mr. Pridgin Teale he advocated the operative treatment of tuberculous glands in the neck (1885), and in 1867 he invented the present short form of clinical thermometer.

"Such are a few achievements of the philosopher, the professor, and the physician; but greater even than them were the character and personal influence of the man, the like of whom his friends can hardly hope to see again. He died as he would have wished in the full tide of his activities; he was to have given the Lloyd Roberts Lecture at the Royal Society of Medicine this autumn, and had a new book ready for the press. Our sorrow is for those left behind; for him there is no feeling but of thankfulness that he had lived so fully and so finely right up to the inevitable end."

Sir Thomas Clifford Allbutt married in 1869 Susan, daughter of the late Thomas England, of Headingley, by whom he had no children. To his widow the sympathy of the whole medical profession is extended. He was buried at Trumpington, near Cambridge, on Wednesday last, the funeral services, which were largely attended, being held in the Chapel of Gonville and Caius College, of which he was a Fellow, and in Great St. Mary's, the University Church.

EPHRAIM MACDOWEL COSGRAVE, A.B., M.D. DUB., M.CH., F.R.C.P. IREL.

Dr. MacDowel Cosgrave, past President of the Royal College of Physicians of Ireland, died in Dublin on Feb. 16th after some weeks' illness at the age of 71. He enjoyed good health until a month before his death, when a slight cerebral hæmorrhage occurred. He appeared to rally, and his friends hoped that he might still have some years to live, but it was not so to be. Dr. Cosgrave was educated at Trinity College, Dublin, and proceeded to his medical degrees in 1876. In 1886 he was appointed lecturer in botany in the Carmichael School, and on the amalgamation of that school with the school of the Royal College of Surgeons three years later he became professor of biology in the latter. He continued to perform the duties of that office to the time of his death. In 1887 he became a Fellow of the Royal College of Physicians of Ireland, and in 1914 was elected President of the College. Dr. Cosgrave was not attached to any of the general clinical hospitals, but he was for many years physician to Drumcondra Hospital, and had also been physician to Cork-street Fever Hospital, and during the war to the Dublin Castle Red Cross Hospital. He was a knight and honorary associate of the Order of Hospitals of St. John of Jerusalem in England, and an examiner and lecturer to the St. John Ambulance Association. He was also a member of several Dublin scientific societies, and at one time filled the office of physician-in-ordinary to the Lord Lieutenant of Ireland.

Among his medical writings he published a treatise on Hints and Helps for Home Nursing and Hygiene, which achieved great popularity, and in 1885 "The Student's Botany," while in 1899 appeared "The Rôle of Alcohol."

Dr. Cosgrave made a special study of the history and antiquities of Dublin, and he was an authority on everything relating to Georgian Dublin. He wrote or edited several books on this topic, including a "Catalogue of Engravings of Dublin," an "Illustrated Dictionary of Dublin," and the publications of the Georgian Society. He had himself a valuable and charming collection of furniture, engravings, books, and book-plates. Dr. Cosgrave was a conscientious and careful physician, courteous and gentle in manner, and a man of charm and culture.

SUSSEX THROAT AND EAR HOSPITAL.—In connexion with the scheme to extend the out-patients' department of the hospital at Brighton, it was stated at the forty-sixth annual meeting, held recently, that although over £900 had now been subscribed, no extensions would be undertaken until the full estimated cost of £2000 was assured. Improvements carried out during the past year included a new and thoroughly efficient sterilising room, kindly provided by Major R. L. Thornton, and a new operating table. Financially, the treasurer stated, there was hardly any debt on the year's working. Of the income from ordinary sources, apart from rents and invested funds, the payments from patients amounted to £976 19*s.* 2*d.*, which was more than half the total. Among the contributions was £163 from friendly, trade, and other societies. The hospital joined the Sussex Provident Scheme during the year and received £75 from it. Lord Leconfield presided over the meeting.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. J. E. Clark to be Surg. Lt.-Comdr.

ROYAL NAVAL VOLUNTEER RESERVE.

W. E. M. Wardill to be Surg.-Lt.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. J. Dorgan retires on retd. pay.

RESERVE OF OFFICERS.

Maj. S. W. Sweetnam, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

Col. T. Kay (late R.A.M.C., T.A.) to be Col. and Asst. Dir. of Medical Services 52nd (Lowland) Division T.A., vice Col. G. H. Edginton, who vacates on completion of tenure of appointment.

Lt.-Col. (Bt. Col.) F. Whalley, from R.A.M.C., T.A., to be Col. and Asst. Dir. of Med. Services 49th (West Riding) Division T.A., vice Col. A. D. Sharp, who vacates on completion of tenure of appointment.

Lt.-Col. (Bt. Col.) R. E. Bickerton, from R.A.M.C., T.A., to be Col. and Asst. Dir. of Med. Services 56th (1st London) Div. T.A., vice Col. A. D. Ducat, who vacates on completion of tenure of appointment.

YEOMANRY.

Supernumerary for Service with O.T.C.—Capt. A. Fowler (late R.A.M.C., S.R.) to be Capt. for service with the Medical Unit Aberdeen University Contingent, O.T.C.

INDIAN MEDICAL SERVICE.

The King has approved of the resignation of his commission by Capt. A. L. Watts.

PAY OF INDIAN MEDICAL SERVICE OFFICERS IN MILITARY EMPLOY.

The Secretary of State for India has sanctioned the extension to Indian Medical Service Officers in military employ of the concessions regarding overseas pay recently introduced for officers of the Indian Medical Service in civil employ. The extension has effect from April 1st, 1924. Officers now in the United Kingdom who have been in receipt of rupee rates of pay for any period after this date, and who accordingly have claims for retrospective adjustment under this concession, should address the Controller of Military Accounts by whom they were last paid in India.

Passage concessions have been sanctioned for officers of the Indian Military Services. They will apply to any passage beginning on or after Feb. 14th. Detailed rules have yet to be drawn up, but the provisional arrangements which have been approved are being communicated by the India Office to all officers concerned who are now under the orders of the India Office.

THE WEST AFRICAN MEDICAL STAFF.

A NEW edition of the West African Medical Staff List, corrected up to Jan. 31st of this year, has just been issued from the Crown Agents for the Colonies, 4, Millbank, Westminster, London, S.W. It contains a list of officers in grades with their dates of appointment, a list of officers arranged by colonies, and an alphabetical list with qualifications and services.

THE GOLDEN BOOK OF THE ROYAL ARMY MEDICAL CORPS.

ON July 13th, 1922, a tablet to the memory of 743 officers and 6130 warrant officers, non-commissioned officers, and men of the Royal Army Medical Corps was erected in Westminster Abbey. The names of the fallen are enrolled in a Golden Book which will shortly be placed in the Chapter House of the Abbey. A reproduction of the list, which gives the names in alphabetical order with the date of death, and an indication as to whether the soldier died in action or of wounds, has now been issued for the relatives and friends at the price of 2*s.* 6*d.* by Messrs. Charles Whittingham and Griggs, Ltd., 20, Took's-court, Chancery-lane, London, E.C.

ROENTGEN SOCIETY.—A general meeting of this society will be held on Tuesday, March 3rd, at 8.15 P.M., in the British Institute of Radiology, 32, Welbeck-street, London, W. A paper on the Photometry of Fluorescent Screens will be read by Dr. Leonard A. Levy, D.Sc., and Mr. D. W. West.

Correspondence.

"Audi alteram partem."

ALKALIS IN CERTAIN DISEASES OF THE SKIN.

To the Editor of THE LANCET.

SIR,—In respect of Dr. F. Carminow Doble's article in your issue of Feb. 7th may I report the following case? A patient of mine had been troubled for many years with patches of eczema breaking out on the outer surfaces of his limbs, not large themselves, but setting up large areas of itching; a patch not larger than a shilling would set the whole forearm afire. Or, again, likewise for the leg or thigh. He had found that this scourge happened in the winter only, and accordingly traced it to the effects of fire heat; thus by careful avoidance of the fire, or the use of a screen, he managed with some, but not complete, success to mitigate his plague. The best curative means were simple unguents-inunction with olive oil after the bath, "cold cream," or "glycerine and honey." In the summers he was almost free. His next trouble was nocturnal micturition. As his urine always had been highly lithatic, always painting the chamber-pot, I advised him to take a small teaspoonful of sodium bicarbonate at bedtime. As this put the micturition right the evening alkali was regularly taken. In two or three weeks the patient observed that his eczema had ceased, and with ordinary care he escaped the fire irritation; the unguents lay neglected on the shelf. Two winters have now passed without eczema, and the limbs can be towelled without irritation. The change is remarkably complete; indeed, the patient says that the skin of his limbs is much more "natural," softer, and more pliant to the touch. I offer to Dr. Doble and your readers no explanation, simply an empirical result.—I am, Sir, yours faithfully,

Cambridge, Feb. 17th, 1925. CLIFFORD ALLBUTT.

HYGIENE OF THE NOSE AND NASO-PHARYNX.

To the Editor of THE LANCET.

SIR,—No more opportune moment could be found than the present one for discussing this subject, when the whole world is being attacked by that most insidious and mysterious of all diseases that are air-borne—viz., influenza. Your readers should be grateful for your calling attention to it in a leading article (vide THE LANCET, Feb. 14th, p. 344).

The medical student has but little time, unfortunately, to study the details of the anatomy of the nose with its vast intricacies, nor of its physiology, and there is practically no instruction given in the hygiene of the healthy nose. It is possible, then, that some of your remarks may lend themselves to be misinterpreted.

The objection to the removal of any part of the surface of the interior of the nose is not peculiar to that organ, since scar-tissue can never function like normal tissue. Also when waste is removed regularly the surface of any organ is likely to remain healthy. But life in the open air will not supply the deficiencies that must be due to lack of care of every sort. Some of the worst cases of sinus disease that have come under my notice have occurred in professional gardeners. It is hardly safe to hold that catarrh is incompatible with the simple life unless that includes the natural methods of the animals that have breathing organs of the same plan as our own—i.e., the keeping of them clean and clear and free from any accumulation of waste. There is some danger in cleaning the nostrils of an infant with pledgets of cotton-wool. The slightest excess of force may drive in the little plugs of dust and dried secretions which lodge in

the nostrils or through the narrow slits which guard the interior of the nasal passages and cause an obstruction which a delicate infant will not be able to shift.

The danger of forcing toxic material into the Eustachian tube is well recognised. It is not so great when one nostril only is closed when blowing the nose, as when there is no airway left in either, but it is sufficiently great specially to be guarded against. The discharges not being able to escape freely are forced up towards the organs among which the nose lies and with which it is in anatomical and physiological continuity and damage is likely to occur to some of them. For the same reason sniffing is a dangerous as well as unpleasant habit. It cannot, however, be seriously suggested that as a suitable alternative the stagnant secretions should be swallowed. The stomach cannot be asked to take on the rôle of a dustbin without interfering with its proper functions. Constant swallowing of anything upsets the rhythm of respiration and when the material swallowed is highly undesirable putrid waste such as develops in chronic catarrh there can occur nothing but harm.

The difficulty of securing the services of anyone who can be trusted to irrigate an infant's nose and know exactly when to stop would suggest that it is a practice not to be encouraged. One case has been brought to my notice where the child succumbed in the nurse's arms, as the exceptional skill and experience were wanting. Nor is it likely that the child who is clogged will have the accuracy of touch to irrigate its nose safely. The child who cannot blow the nose should be trained in the art. The "unkempt" nose is a danger to its owner and to his companions. Handkerchief drill is already established in some schools with the greatest benefit to all concerned.

I am, Sir, yours faithfully,

OCTAVIA LEWIN, M.B., B.S. Lond.

Wimpole-street, W., Feb. 20th, 1925.

THE ACIDIC VALUE OF THE URINE IN SKIN DISEASES AND OTHER CONDITIONS.

To the Editor of THE LANCET.

SIR,—If, as Dr. H. W. Barber admits in his letter in your last issue, the urine is sometimes hypoacid, and there is no evidence of acidosis in the blood, I do not see why one should be tempted to try alkalies. Dr. Barber states that the urine may become very acid and the patients show a high alkali tolerance. It would be interesting to know what controls he has carried out on apparently normal people.

However, the chief reason for this letter is to explain that having failed to corroborate his theory by control work I was not deterred from trying the therapeutic test. In many cases valuable discoveries have been made working on a theory which has been found subsequently not to be the right one, and an admirable instance of this is found in the Wassermann reaction for syphilis. None of my patients were improved by making their urine strongly alkaline and for some time after the publication of Drs. Barber's and Semon's paper I was constantly seeing patients with highly alkaline urine resulting from their having been placed upon Dr. Barber's prescription.

Dr. Barber admits that others have been unable to corroborate his work, but says there is no doubt that it is right. I would point out that Dr. Doble disagrees with him in that Dr. Doble thinks it is not enough to produce alkalinity, but that it is necessary to produce only a certain degree, otherwise the condition is not cured.

Dr. Semon, since the publication of the paper in which he was associated with Dr. Barber, has published another recommending X rays for acne, a disease which I am sure Dr. Barber will agree with me in regarding as lying on a foundation of seborrhœa; so that apparently Dr. Semon has not found the alkaline treatment alone sufficient. Are we then to accept a theory based on results which we cannot corroborate and to continue a form of treatment which in our hands and the hands of others has proved futile?

I am, Sir, yours faithfully,

ARTHUR WHITFIELD.

Harley-street, W., Feb. 23rd, 1925.

UNILATERAL PHRENIC NERVE PARALYSIS.

To the Editor of THE LANCET.

SIR,—Sir Charlton Briscoe's article on this subject in THE LANCET of Feb. 21st is of particular interest because of the renewed attention to artificial paralysis of one half of the diaphragm, now that the operation of phrenic evulsion has been substituted for that of phrenicotomy.

The symptoms of "phrenic paralysis" due to morbid lesions are evidently very different from those which follow phrenic evulsion. I have recently done this operation on six patients and the total absence of any post-operative symptoms has been most surprising. When the nerve is first seized in the forceps (a local analgesia only is used), there is a twitch of the corresponding half of the diaphragm visible to the onlookers, and felt as such by the patient. When the nerve gives way, whether intrathoracically at some 10 to 20 cm. distant, or by actual evulsion of the fibres from the diaphragm, the relaxation of the strain is also felt, but no pain whatsoever.

After this there have been *no* symptoms, neither pain, respiratory distress, nor preference for any particular posture. The only difference felt referable to the altered position of the diaphragm has been the sensation of a hollow under the right costal margin in one patient, in whom there has been considerable elevation of the dome and of the liver. In every case the disappearance of the dry reiterated purposeless cough has been remarkable.

I am, Sir, yours faithfully,

H. MORRISTON DAVIES.

Vale of Clwyd Sanatorium, Feb. 21st, 1925.

TINCTURE OF IODINE (PH. FR.).

To the Editor of THE LANCET.

SIR,—In your issue of Feb. 21st Dr. P. C. Brett states that the change in the formula for tincture of iodine (Codex 1908) made in the French Codex of 1922 has not been published in medical literature. The following paragraphs appeared in an editorial in the *Prescriber* of February, 1923, p. 64, dealing with iodine as an internal remedy:—

". . . Since that time, however, a further difficulty has arisen, which will nullify all the recommendations made of this [French Codex] tincture. *The French Codex has altered the formula.* Under the name of 'Tinctura Iodi Iodurata,' a new preparation appears in the Codex Supplement 1920, which contains iodine, 30 grains, and potass. iod., 12 grains, in one fluid ounce of alcohol 90 per cent., and this preparation is to take the place of the old Codex tincture. The new formula entirely defeats the object of the intensive iodine treatment, which is to administer iodine to the amount of tolerance without KI. This cannot be done with the new tincture, which will of course be supplied if 'Tinct. iodi, French Codex' be prescribed, and physicians must note this and cease to specify 'French Codex.'

"In the absence of a suitable official preparation we would suggest the use of the *Tinctura Iodinei* of the old Edinburgh Pharmacopœia. This contains one grain of iodine in 16 minims of rectified spirit, without KI, and is still kept in stock by many pharmacists north of the Tweed. It is 50 per cent. weaker than the old French Codex preparation, but as dosage is not definitely laid down, being entirely a matter of tolerance, the instructions will be to begin with 2 or 3 minims and gradually increase so long as no iodism is produced. Boudreau observed that one of his patients was able to take 350 drops (not minims) in 24 hours for a month. . . ."

I am, Sir, yours faithfully,

THOMAS STEPHENSON,
Editor of the *Prescriber*.

Edinburgh, Feb. 21st, 1925.

MEDICAL AID FOR THE RIFFIS.

To the Editor of THE LANCET.

SIR,—In the House of Commons last week Mr. Saklatvala asked the Prime Minister if it was the intention of the Government to continue the policy of the former Government or whether it will support an appeal of the British Red Crescent Society to the French and Spanish Governments to give facilities for sending a medical mission and medical supplies for the Riffis. For it was reported that the sick and wounded were without medical aid, although Article 2 of The Hague Convention (Laws and Customs of War on the Land) gave belligerent rights to fighting men in a levee en masse of the population, providing that they carried their weapons openly and conformed to the laws and usages of war. Mr. Austen Chamberlain (Secretary of State for Foreign Affairs) replied to the effect that the Government were not prepared to intervene in a matter which was entirely a question for the Spanish and French Governments. He further stated, that by Article 2 of The Hague Convention, the provisions of the land warfare regulations apply only as between the signatory parties, and that even if the insurgent tribes in the Spanish and French protectorates were signatories, that the sending of a medical mission or medical supplies to the Riffis have nothing to do with the land warfare regulations.

With the passing remark that Mr. Saklatvala's question was neither inspired directly or indirectly by the Red Crescent Society, one must confess that it is difficult to conceive how an official in the position of Mr. Chamberlain could ever have returned any other reply. But this by no means disposes of British responsibility in the matter. There is an insistent cry from our Moslem fellow-subjects in India that the sufferings of their co-religionists in the Riff should not be disregarded. With unanswerable logic they point out what a clamour would arise in England if a tiny Christian community struggling for freedom against a Mohammedan power were to be deprived of all medical assistance. Some of us are inclined to listen to their cry. We remember with gratitude how the Moslem chivalry of India drew their swords in the Great War and proved their traditional valour on the battlefields of France, Mesopotamia, and Palestine. Many were killed, and lie for all time in honoured graves, while those who were wounded or "gassed" remember their sufferings and wonder what would have been their fate had they been deprived of medical assistance in their hour of need. They read in the papers how the people of the Riff are being assailed with all the latest diabolical contrivances of war—shell, bomb, and poison gas—and the poorest of the poor have subscribed their mites to help the victims. It is a supreme pity that Spain will not see her way to concede to a society working solely in the interests of humanity the right to send a hospital unit. It would be a valuable witness to the fact that Spain was conducting the war in accordance with regulations, and would also be a comfort and protection to the Spanish prisoners in the hands of the Riffis; for the British Red Crescent Society, although founded primarily for the relief of Moslem victims of war, does not work in any mean or sectarian spirit. The President, the Rt. Hon. Syed Ameer Ali, who has had a long and distinguished career in the service of the King-Emperor, has always made this clear. I well remember that before my departure for the Turco-Italian war in Tripolitana, he strictly enjoined me that I was on no account to allow differences of religion or nationality to prejudice me in granting relief, with the result that Christian, Moslem, and Jew shared alike in the charity we administered.

Finally, it must not be thought that those of us who advocate the sending of medical relief to the Riff are in any sense hostile to the Spanish people. We recognise the valour of the Spanish troops who are battling in a country more difficult to fight in than Switzerland or Montenegro, and we regret that treasure should be poured out in an attempt to subjugate a gallant little people, while the fertile soil and vast mineral treasures of Spain are left neglected. Surely if Great Britain, backed by the enormous resources of the Empire could afford to grant a practical independence to Ireland, Spain need feel no humiliation in granting the status of a dominion to Abdul Kerim's people. But that is hardly a medical question.

I am, Sir, yours faithfully,

ERNEST H. GRIFFIN.

48, Upper Berkeley-street, Portman-square, W.1,
Feb. 24th, 1925.

ASSOCIATION WITH UNQUALIFIED PERSONS.

To the Editor of THE LANCET.

SIR,—From letters which I have received I gather that some practitioners are in doubt as to the bearing of the following paragraph in the Warning Notice issued by the Council:—

"5. Association with Unqualified Persons.

"Any registered medical practitioner who, either by administering anæsthetics or otherwise, assists an unqualified or unregistered person to attend, treat, or perform an operation upon any other person, in respect of matters requiring professional discretion or skill, will be liable on proof of the facts to have his name erased from the Medical Register."

I am directed to say that this warning does not apply to any person whose name appears upon the Dentists Register, whether so entered in virtue of a diploma or under the Dentists Act, 1921. A registered medical practitioner is entirely at liberty to give an anæsthetic for such a dentist.

I think it might be helpful if the attention of medical practitioners was drawn to their position in regard to this matter.

I am, Sir, yours faithfully,

NORMAN C. KING,
Registrar, General Council of Medical Education and Registration of the United Kingdom.

Feb. 24th, 1925.

COLOUR IN ANIMALS.

To the Editor of THE LANCET.

SIR,—It might be of interest to those biologists engaged in the study of colour in animals (Mr. J. Barcroft will shortly give three lectures on this subject at the Royal Institution) to bear in mind the paradoxical pupil reaction. The discovery that after section of one sciatic nerve paradoxical effects appear in the contralateral eye about the twelfth day was in itself remarkable. But the further discovery that any section or injury of a nerve is reflected in the pupil reactions, proving thereby an intimate functional relationship between the efferent portion of the pupil-dilator mechanism and every portion of the periphery through the medium of the sensory nerves, suggests that possibly the explanation so eagerly sought for, the law governing the adaptation of colour in animals to their surroundings, lies in this direction. It is in full support of the fact that blinded frogs and chameleons lose this power of adaptation of the colour of their skins to their surroundings.

I am, Sir, yours faithfully,

HORATIO MATTHEWS, M.D.

Harley-street, W., Feb. 6th, 1925.

ROYAL SANITARY INSTITUTE.—A sessional meeting of the Institute will be held on Friday and Saturday, March 6th and 7th, in the Town Hall, Halifax, when discussions will take place on the Working of the Milk and Dairies (Amendment) Act, 1922, to be opened by Mr. John Pollard, M.R.C.V.S., and on Some Food Dangers by Mr. H. T. Lea. The chair will be taken at 4 P.M. on Friday by Prof. A. Bostock Hill. Those proposing to attend the reception, luncheon, and visits in connexion with the meeting should notify the hon. local secretary, Dr. Cyril Banks, Town Hall, Halifax, not later than Monday, March 2nd.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated :—

Surgery.—J. H. Clapp, London Hosp. ; J. L. Hopkins, Guy's Hosp. ; O. W. Percival, London Hosp. ; C. C. Po, Guy's Hosp. ; J. Shutt, Leeds and London Hosp. ; R. F. Stubbs, Manchester ; and B. Temple-Raston, St. Mary's Hosp.

Medicine.—K. V. Mead, St. Thomas's Hosp. ; C. C. Po and P. B. Skeels, Guy's Hosp. ; B. L. Steele, Univ. Coll. Hosp. ; and R. F. Stubbs, Manchester.

Forensic Medicine.—A. Henson, Charing Cross Hosp. ; K. V. Mead, St. Thomas's Hosp. ; T. K. Natesan, London Hosp. ; and R. F. Stubbs, Manchester.

Midwifery.—N. E. Challenger, McGill ; T. K. Natesan, London Hosp. ; O. W. Percival, Sidney ; C. C. Po, Guy's Hosp. ; J. Shutt, Leeds and London Hosp. ; B. Temple-Raston, St. Mary's Hosp. ; I. Waynik, Charing Cross Hosp. ; and G. H. Weeber, Middlesex Hosp.

UNIVERSITY OF BRISTOL.—At examinations held recently the following candidates were successful :—

FINAL EXAMINATION FOR DEGREES OF M.B., CH.B.

Part II., with Second-class Honours.—Dorothy E. Crellin, distinction in medicine ; Constance Irene Ham, distinction in surgery and obstetrics ; Arthur H. Lowther, distinction in pathology and obstetrics ; and Rosalie E. Lucas, distinction in medicine.

Pass.—Arthur F. Alford, Kenneth F. Alford, Alexander S. Cox, Sidney J. H. Griffiths, Frederick K. Hollingshead, John A. Hooker, Kenneth F. Platt, David C. Prowse, Lennox G. Robertson (distinction in obstetrics), Herbert Rogers, Gertrude M. Terrell, and Maria M. Tewater.

In Medicine (completing Examination).—Ernest R. Clutterbuck.

In Surgery (completing Examination).—Helen M. Dixon.

In Public Health (completing Examination).—Arthur H. Marshall.

In Group I. only (Surgery and Obstetrics).—Elizabeth E. Benson, Margaret P. Posthuma, Herbert J. Satchwell, and Kathleen M. Willmore.

In Group II. only (Pathology, Medicine, and Public Health).—Charles F. Rowe Killick.

Part I. (including Forensic Medicine and Toxicology).—Geoffrey W. R. Bishop, John F. O. Bodman, Muriel E. Drew, Francis S. Dymond, George L. Feneley, Francis R. Gedye, Arthur P. Gorham, Mildred B. Harvey, Thomas P. Lalonde, Maurice E. J. Packer, Charles B. Perry, Leslie B. Phillips, Ernest S. Rogers, and Arthur A. B. Vincent.

EXAMINATION FOR DIPLOMA IN PUBLIC HEALTH.

Vincent Ryan.

In Part II. (completing Examination).—John Ledingham.

In Part I. only.—Nora A. McD. Rodger and William W. S. Sharpe.

UNIVERSITY OF LONDON.—A course of four lectures on Puerperal Sepsis will be given in the lecture theatre at St. Thomas's Hospital Medical School (Albert Embankment, S.E.) by Prof. B. P. Watson, at 5 P.M. on March 2nd, 3rd, 4th, and 5th. At the first lecture the chair will be taken by Dr. H. Russell Andrews. Admission free.—A course of two lectures on Vital Statistics will be given at University College by Prof. Harald Westergaard, at 5.30 P.M., on March 9th and 11th. The lectures will be delivered in English. Admission free.

University College.—A special course for the Primary Fellowship of the Royal College of Surgeons of England, in preparation for the June examination, will begin at University College, Gower-street, London, W.C., on Monday, March 2nd.

UNIVERSITY OF LEEDS.—Dr. T. Wardrop Griffith has placed before the Council of the University his resignation of the professorship of medicine. In his letter he points out that, in harmony with the rules of the Leeds General Infirmary, he becomes a member of the consulting staff next September, by which date he will have served for 20 years on the full staff. It was this fact which had led him to anticipate the age-limit for the tenure of office which attaches to professorships in the University ; for, although members of the consulting staff have the privilege of admitting a limited number of patients to be under their care in the infirmary and continue to work within its walls, he felt that the best interests of the University would be served if the professor of medicine occupied a position on the full staff. At the meeting of the University Council on Feb. 18th a resolution was adopted, in which the resignation of Prof. Griffith was accepted with deep regret, and a fitting tribute was paid to his work for the University. Prof. Griffith was senior professor at the Leeds Medical School. He was appointed to the chair of Anatomy in 1887 and transferred to the chair of Medicine in 1910, a continuous record of 38 years. In both departments his courses of lectures have been notable for their vivid quality and the perfection of arrangement and delivery. His work in the chair of Medicine has been acknowledged by his admission to the Order of St. Michael and St. George and the conferment of the honorary doctorate of Laws by his own University of Aberdeen.

HUNTERIAN SOCIETY.—The Hunterian Oration on Angio-hæmic Anæmia will be delivered by Dr. H. Letheby Tidy, on March 2nd, at 9 P.M., at the Mansion House.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—The Milroy Lectures will be delivered on March 5th, 10th, and 12th at 5 o'clock at the College, Pall Mall East, S.W., by Dr. Salusbury MacNalty on Epidemic Diseases of the Central Nervous System. Any member of the medical profession will be admitted on presentation of card.

INTERCHANGE OF HEALTH OFFICERS.—On the recommendation of the Society of Medical Officers of Health, the Ministry of Health have nominated Dr. James Fenton, M.O.H. for Kensington, and Dr. Alfred Greenwood, M.O.H. for Kent, for the interchange of health officers to be held in Jugo-Slavia during May and June next, under the auspices of the Health Section of the League of Nations. For the interchange to be held in Belgium about the same time the Society recommended Dr. R. J. Maule Horne, M.O.H. for Poole, who has been duly nominated by the Ministry. On the recommendation of the Chief Medical Officer of the Ministry of Home Affairs of Northern Ireland, the Ministry of Health have also nominated Dr. Norman C. Patrick for the Belgian interchange.

MEDICAL TOURS IN MOROCCO.—The French Compagnie Transatlantique is organising two new tours in Morocco for medical men and their families. The first tour will start from Bordeaux on March 30th, and will terminate on April 30th at Marseilles. The second will start from Marseilles on April 18th, and will finish at Bordeaux on May 14th. The journey through Algeria and Morocco will embrace all the places of interest from Algiers to Marakesh, and the entire transport will be by motor-car, each vehicle seating ten passengers. The cost of the tour is 4800 French francs per head. Further information may be obtained from Dr. Victor Gardette, 3, rue Alexandre de Humboldt, Paris (XIV.), who is undertaking the arrangements of the tours.

PUBLIC HEALTH STUDY.—The next interchange of public health officials to be organised by the League of Nations will take place early in March, when ten medical officers from the Republics of South America will meet in Cuba and spend the succeeding months until August in a tour of study arranged by the public health authorities of the United States, Canada, and various European countries. These officials will study the general character of the health organisations of the United States, Canada, and England, and on the continent of Europe several types of organisations where particularly striking results have been obtained.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A discussion on post-graduate teaching in London has been arranged to take place at 1, Wimpole-street, on Wednesday, March 18th, at 6 P.M. Sir Arbuthnot Lane, President of the Fellowship, will preside, and all members of the medical profession in London are invited to attend and to give their criticisms of the existing facilities, and suggestions for their improvement and extension. On Monday, March 2nd, at 5.30 P.M., Prof. H. MacLean will lecture for the Fellowship in the West Lecture Hall on Renal Disease : Its Diagnosis and Treatment. A three-weeks' course in medicine, surgery, and gynæcology will begin at the Royal Waterloo Hospital on March 2nd. Lectures and demonstrations will be given by the staff in the wards and out-patient department, with special reference to gynæcological diagnosis, hernia, diseases of the stomach, intestines, &c. From March 4th to 28th Dr. Frederic Thomson will hold a series of demonstrations in the Diagnosis and Treatment of the Acute Infectious Diseases at the North-Eastern Fever Hospital (Tottenham). The demonstrations will be given on Wednesdays and Saturdays at 11 A.M. The Central London Ophthalmic Hospital has arranged an afternoon course in ophthalmology, starting from March 9th to April 4th. The members of the staff will deal with the different aspects of diseases of the eye, and for those desiring operative work a class can be arranged. From March 16th to 28th the Chelsea Hospital for Women will begin a fortnight's course in gynæcology. Operations, lectures, and demonstrations will be available. The Brompton Hospital for Diseases of the Chest will conduct a fortnight's course from March 16th, which will include artificial pneumothorax, bronchitis, demonstrations of cases, X ray work, protein tests, and the varying phases of chest affections. The Royal Northern Hospital, in conjunction with the Royal Chest Hospital, will give an intensive course in medicine, surgery, and the special departments from March 16th to April 4th. Copies of the syllabus of the above-mentioned courses, together with the February issue of the Bulletin, will be sent on application to the Secretary of the Fellowship, 1, Wimpole-street, London, W.

Dr. David Alexander Volume has been appointed an official member of the executive council of the Presidency of the Virgin Islands.

WESTON-SUPER-MARE HOSPITAL.—This institution has become so inadequate that an attempt is being made to raise between £40,000 and £50,000 to enlarge or improve it, and in the first 21 days of an intensive campaign over £22,000 was obtained. In the summer the population of Weston swells to 100,000, but the hospital contains only 41 beds, of which 6 are fever beds. In addition to more medical wards, a number of new or improved departments are needed.

INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY.—The annual general meeting of this society will take place in Paris this year on April 20th, at Prof. Carnot's Library, Laboratoire de Thérapeutique, Faculté de Médecine (Ecole Pratique), when discussions will be held on (*a*) the Treatment of Diabetes by Insulin, from the Hydrological Point of View, and (*b*) the Spa Treatment of Rheumatic Exudations following Traumatism. On the following day visits will be paid to hospitals, the Radium Institute, the Institut d'Hydrologie, and other places of interest. The hon. secretary is Dr. E. P. Poulton, 36, Devonshire-place, London, W. 1, from whom further particulars may be obtained.

GLASGOW WESTERN INFIRMARY.—Like the Glasgow Royal Infirmary, the annual report of which was summarised in our last issue, the Western Infirmary has had a year of exceptional revenue from legacies, the total sum received under that head exceeding £94,000. The ordinary revenue, although increased, failed, however, to meet the ordinary expenditure by nearly £11,000. The infirmary, which has just completed its first half-century, has a daily average of 548 patients. It is hoped to establish a bio-chemical department at a cost of £25,000, towards which a donation of £5000 has been received. A memorial chapel is approaching completion.

REDLANDS HOSPITAL FOR WOMEN, GLASGOW.—The new home of this hospital, formerly the Glasgow Women's Private Hospital, has been opened by Lady Rhondda. Its special object is the treatment of women by women doctors, the patients whom it is intended to benefit being those who cannot be treated at home or afford to go to a nursing home, and are undesirous of going to a general hospital. The hospital began in 1903 with eight beds; there are now 50. The cost of purchase and equipment has been above £20,000, and the new name is that of a large private residence which has been converted to hospital uses with remarkable success.

THE LATE DR. J. L. OWEN.—John Lewis Owen, M.R.C.S., L.R.C.P. Lond., of Holyhead, Anglesey, died recently in a London nursing home, at the age of 57, following an operation. A native of Anglesey he studied medicine at Edinburgh, where he was a demonstrator of anatomy in Surgeons' Hall. He qualified in 1888. For a time he was resident medical officer at the Union Infirmary, Sheffield, and resident surgeon at Denbighshire Infirmary, before setting up in practice at Holyhead, where he worked for 25 years. For many years he was medical officer of health and public vaccinator to Holyhead Union and Board of Guardians. He was also surgeon to the Admiralty and Trinity Corporation, Holyhead, and also a justice of the peace for his native county. He leaves a widow and a daughter.

MANCHESTER HOSPITALS.—The past year's accounts of the Manchester Royal Infirmary show a deficit of £24,000, the result, to a certain extent, of the abandonment of the custom of placing the whole of the year's legacies to income account—only 25 per cent. has been so dealt with, that the income may be equalised. There has been a remarkable increase in the number of accident patients treated—at over 24,000 they were nearly 6000 more than in 1921. It has been observed that the number of accident cases mounts steadily from January to July, when they began as steadily to decrease. There are 1250 patients on the waiting list. The most urgent need is additional accommodation for the nurses. It is desired so to increase the number that their working hours may be reduced from 63 per week for day and 73 for night-duty to an all-round week of 56 hours. To do this 70 additional nurses would be required.—Manchester Northern Hospital for Women and Children is about to appeal for a building fund of £180,000.—The Manchester and Salford Hospital for Skin diseases also contemplates large extensions. A "Norris Midwood Memorial Wing" is to be built to commemorate the late Mr. Midwood, who was hon. treasurer for nearly 30 years. It is hoped to include a large department for artificial sunlight treatment.

THE LATE DR. A. ROBINSON.—On Feb. 17th Alfred Robinson, M.D. Durh., L.S.Sc., medical officer of health for Rotherham, died after several weeks' illness. He was born in 1860 at Merthyr Tydfil and studied medicine at St. Bartholomew's Hospital and the University of Durham, and graduated M.B. Durh. in 1883 and M.D. in 1887, having previously qualified M.R.C.S. in 1882, and L.S.A. in 1881. He went to Rotherham in 1884, where his first medical appointment was that of medical officer to the Rotherham Workhouse, which he resigned after 21 years' service. He was appointed borough medical officer and police surgeon in 1892. He was at one time president of the Sheffield Medico-Chirurgical Society and also of the Yorkshire Branch of the Society of Medical Officers of Health. For many years he was connected with the Volunteer movement, and did service during the war, retiring as Major of R.A.M.C. He inaugurated the Child Welfare Centre in Rotherham and also a maternity home, and was chiefly responsible for the establishment of an isolation hospital, a small-pox hospital, and subsequently a sanatorium.

ADULTERATION OF FOOD IN SALFORD.—Mr. G. D. Elsdon, the borough analyst of Salford, in his annual report shows that in certain foods in common use there is adulteration on a rather extensive scale. Of the 1388 samples taken under the Sale of Food and Drugs Act, 6·9 were returned as adulterated, as compared with 5·6 per cent. of the samples in 1922, and 8·7 in 1921. In a sample of "Beef and Malt Wine" the mixture was made up of over 75 per cent. of water, nearly 22 of sugar, and 0·2 per cent. of equal parts of meat and malt extracts. The amount of alcohol was 1·5 per cent. and salicylic acid 0·07 per cent. Of 104 samples of drugs, only three were found adulterated. Of 56 samples of dispensed medicines made up from "prescriptions," six were returned as unsatisfactory.

THE LATE DR. FRANK W. A. GODFREY.—By the recent death of Frank William Albion Godfrey, M.B., C.M. Edin., of Scarborough, at the age of 64, in a Leeds nursing home, following complications arising from an attack of influenza, Scarborough has lost one of its best-known practitioners. Frank Godfrey was born at sea while his parents were on a passage to Australia. He received his early education in Australia and studied medicine at the University of Edinburgh, where, in 1883, he graduated with honours. After holding hospital appointments in Edinburgh and Scarborough, he became assistant to the late Dr. Hartley, of Malton, whose daughter he married. He finally settled in Scarborough, where later he became an honorary consulting surgeon to the hospital and dispensary. He was a county magistrate and J.P. for Scarborough, a member of the Leeds and West Riding Medico-Chirurgical Society, a former president of the York Medical Society, and, in 1909, president of the Yorks Branch of the British Medical Association. He was one of the founders of the Ganton Golf Club and a Past-Master of the Old Globe Lodge of Freemasons. Dr. Godfrey is survived by Mrs. Godfrey and three daughters.

POOR-LAW UNIONS AND VOLUNTARY HOSPITALS.—In his address to the 50th Central Conference of the Poor-law Guardians of England and Wales the Chairman, the Rev. Lancelot R. Phelps, Provost of Oriel, said that the voluntary hospitals were so hard put to it that the guardians must come to their aid. There was here a field of constructive adventure, and if the guardians could fill it they would do much to increase the efficiency of labour by shortening the time of sickness. This could best be accomplished by specialisation and getting rid of the old idea of the mixed workhouse, by reckoning up the needs of a district, converting some of the workhouses into hospitals pure and simple, and making provision for other classes of inmates. The provision for the sick within a district formed by several unions should be under the care of a joint committee representing the Unions and the voluntary hospitals.

A BIRMINGHAM AMALGAMATION.—A scheme for the amalgamation of the Royal Orthopædic and Spinal Hospital and the Birmingham Cripples' Union has been approved by the General Committee of both hospitals. The Orthopædic Hospital, which was established in 1817, has long been in need of extension; the Cripples' Union dates from 1896. The scheme is based upon the complete pooling of all buildings, equipment, and financial resources, and a union of staffs. Arrangements for a considerable increase in the number of hospital beds for the treatment of cripples of all ages are under consideration. The Cripples' Union, with 180 beds, is the third largest hospital charity in Birmingham, and the Orthopædic Hospital has recently received from its chairman, Mr. J. H. Francis, a gift of leasehold premises at Edgbaston which will accommodate 30 convalescents. It is hoped that the amalgamation will enable adequate provision to be made for Birmingham and the

surrounding areas, by the aid of local clinics in Coventry, the Black Country towns, &c., and the organisation of a system of after-care such as is already in operation in the city in connexion with the Cripples' Union. During the past 12 months the combined expenditure of the two institutions exceeded £40,000.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The eighteenth meeting of this Commission was held at the Home Office, Whitehall, on Feb. 19th, Lord Lawrence of Kingsgate in the chair. The British Lental Association, represented by Dr. John H. Badcock, L.D.S., Mr. Ernest Y. Richardson, L.D.S., and Mr. Bryan J. Wood, L.D.S., gave evidence on the question of making dental treatment a universal benefit under the Health Insurance Act, and the scope, administration, and cost of such a benefit. The British Society of Dental Surgeons, represented by Sir Frank Colyer and Dr. E. W. Fish, gave evidence on the same range of subjects. Thereafter Mr. R. J. Meller, M.P., and Mr. E. F. Spurgeor, representing the Prudential Approved Societies, were examined on a variety of matters relating to the administration of the society. The Commissior announce that proof copies of the oral evidence and the relative statements submitted at the meeting of Feb. 5th are now on sale at His Majesty's Stationery Office. (2*s.* 3*d.*)

MINERS' WELFARE SCHEME.—The levy of a penny per ton on all coal raised in Great Britain for the Miners' Welfare Scheme is to be continued for another five years, both coalowners and miners being unanimous that it should be continued. The joint committee of owners and men will thus be able to prolong one of the largest and most valuable experiments in industrial welfare that this country has produced. The funds already allocated or in hand amount to nearly £3,000,000. One-fifth of the levy goes to a general fund and is expended on mining education and research into problems of health and safety. By grants from the fund pithead baths, recreation grounds, clubs, and institutes have been established, and convalescent homes for miners endowed. Such a scheme might well be adopted by other great industries.

HARROGATE INFIRMARY.—The supporters of this hospital have at last, thanks to the honorary medical staff, found a way out of the difficulties caused by the proposed enlargement. Two schemes had been proposed—the extension of the existing building, and the erection of a modern hospital on a new site. The first was roundly condemned by the 16 members of the honorary staff as "bad from all points of view"—an opinion confirmed by the experts who were consulted by the Building Committee; finance was felt to be an insuperable obstacle to the second. Thereupon the honorary staff proposed a plan of their own. They suggested the purchase of a site of six or eight acres and the building upon it of a medical department of 40 beds, with a kitchen adequate for 120 beds. It was claimed that the wards of the present infirmary would thus be relieved of medical cases, and that more room would be found for surgical cases without the need for alterations. The urgent need of additional accommodation would thus be met, and the nucleus formed of a modern hospital, to be completed as money becomes available. At the annual meeting of subscribers the scheme, which will cost £40,000, was opposed. The present accommodation of the infirmary is 60 beds.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 14TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 150; scarlet fever, 1653; diphtheria, 1045; enteric fever, 42; pneumonia, 1742; puerperal fever, 36; cerebro-spinal fever, 9; acute poliomyelitis, 6; encephalitis lethargica, 51; dysentery, 9; ophthalmia neonatorum, 119. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases showed an increase of 12 over the number for the preceding week. Twenty-nine cases were notified from Derbyshire, 6 from Lincolnshire (Sleaford, 6), 16 from Northumberland, 22 from Notts, and 61 from Yorks, North Riding, (Middlesbrough, C.B. 57).

Deaths.—In the aggregate of great towns, including London, there were 6 deaths from enteric fever, 65 from measles, 11 from scarlet fever, 133 from whooping-cough 41 from diphtheria, and 354 from influenza, as compared with 291, 202, 195, and 142 in the four preceding weeks. In London itself the deaths from influenza numbered 92, from whooping-cough 47, and from diphtheria 11.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, March 2nd.

TROPICAL DISEASES AND PARASITOLOGY: Special Meeting at 5.30 P.M.
Paper:
Dr. Henry E. Meleney (Union Medical College, Peking): Kala-azar in China; with Special Reference to its Histo-pathology in Experimentally Infected Hamsters. Histological sections will be shown, and lantern slides illustrating some of the special features of the infections.

EPIDEMIOLOGY, COMPARATIVE MEDICINE, DISEASE IN CHILDREN — *Special Discussion:* at 8 P.M. The Control of Tuberculosis and the Milk-supply (adjourned from Feb. 9th).
Speakers:
Dr. M. J. Rowlands, Dr. Stenhouse Williams, Dr. David Nabarro, Sir Layton Blenkinsop, Dr. Nathan Raw, Mr. G. P. Male, Sir Henry Gauvain, Dr. A. Stanley Griffiths, and others.

Tuesday, March 3rd.

ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.).
Cases will be shown by Mr. Jenner Verrall and others.

PATHOLOGY: at 8 for 8.30 P.M. at the Lister Institute, Chelsea, S.W.
Demonstrations:
T. Lumsden: The Effects of an Anti-serum on Cancer Cells in vitro.
H. Schutze and S. S. Zilva: Experimental Tubercle in Rats.
Communications:
V. Korenchevsky: Some Important Points in the Technique Necessary for the Accurate Study of Metabolism in Rabbits.
B. Korenchevsky and M. Carr: Studies in the Internal Secretion of Sexual Glands: Influence of the Testis and Prostate on the Nitrogen Metabolism of Rabbits.
R. St.J. Brooks: The Serological and Biochemical Reactions of Pathogenic Plant Bacteria.
J. C. G. Ledingham: The Guarnieri Body.
S. P. Bedson, H. B. Maitland, and M. Burbury: Foot-and-Mouth Disease in the Guinea-pig.

Wednesday, March 4th.

BALNEOLOGY AND CLIMATOLOGY, EPIDEMIOLOGY AND STATE MEDICINE, MEDICINE, THERAPEUTICS AND PHARMACOLOGY. — *Special Discussion:* 5.30 P.M. The Nature, Prevention and Treatment of Fibrositis.
Dr. W. Edgecombe will open the Discussion for the Section of Balneology, followed by Dr. J. A. Glover (Epidemiology), Sir William Willcox (Medicine), and Dr. P. Hamill (Therapeutics).
Other Speakers:
Dr. Ackerley, Dr. Midelton, Dr. Kerr Pringle, Sir Percy Bassett-Smith, Dr. R. Hill, Mr. J. E. R. McDonagh, Dr. M. B. Ray, Dr. Oliver Heath, Dr. C. E. Sundell, and Dr. Higgins.
(The Discussion will be continued on Thursday, March 5th, at 5.30 P.M.)

SURGERY: at 8.30 P.M.
Communication:
Mr. Pinthu Sai (Bangkok): A Case of Sarcoma of the Breast.
Discussion on
The Mortality of Appendicitis, to be opened by Mr. Joseph Adams and Mr. McNeill Lowe.

Thursday, March 5th.

BALNEOLOGY AND CLIMATOLOGY, EPIDEMIOLOGY AND STATE MEDICINE, MEDICINE, THERAPEUTICS AND PHARMACOLOGY — *Special Discussion:* 5.30 P.M. The Nature, Prevention and Treatment of Fibrositis.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.
Specimens:
Mr. Beckwith Whitehouse: (1) Uterus and Vagina Excised for Epithelioma of Vagina. (2) Sarcoma Botryoides of Cervix Uteri. (3) Mesenteric Dermoid.
Prof. Louise McIlroy: Retroplacental Hæmatoma from a Case of Toxæmia of Pregnancy.
Short Communications:
Dr. J. S. Fairbairn and Dr. Z. Mennell: Toxæmia in Early Pregnancy with Jaundice, Hyperemesis and Multiple Neuritis.
Mr. Everard Williams and Dr. Russell Reynolds: A New Method of Determining the Patency of the Fallopian Tubes by Means of X Rays.
Paper:
Dr. Sidney Forsdike: Investigation of the Uterus and Fallopian Tube by Inflation with Air and X Rays.

Friday, March 6th.

LARYNGOLOGY: at 5 P.M. (Cases at 4 P.M.) Cases and Specimens will be shown.

ANÆSTHETICS: at 8.30 P.M.
Paper:
Mr. F. S. Rood: Extradural Anæsthesia.

Saturday, March 7th.

OTOLOGY: at 10.30 A.M. (Cases at 9.45 A.M.) Cases and Specimens will be shown.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
WEDNESDAY, March 4th.—9 P.M., Sir Bernard Spilsbury: Wounds and Other Injuries in Their Medico-Legal Aspect (Second Lettsomian Lecture).

HUNTERIAN SOCIETY.
MONDAY, March 2nd.—9 P.M. (at the London Mansion House).—Dr. H. L. Tidy: Angio-Hæmic Anæmia. (Hunterian Oration.)

LECTURES, ADDRESSES, DEMONSTRATIONS &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, March 2nd to SATURDAY, March 7th, 1925.—WEST LECTURE HALL, Royal Society of Medicine, 1, Wimpole-street, W. Lecture arranged by the Fellowship of Medicine and open to all members of the medical profession. Monday, March 2nd, at 5.30 P.M., Prof. H. MacLean on Renal Disease—Its Diagnosis and Treatment.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special Course in Medicine, Surgery, and Gynæcology. Lecture-Demonstrations will be given in the Wards and Out-patient Departments.—NORTH-EASTERN FEVER HOSPITAL, St. Anne's-road, Tottenham, N. Wednesday and Saturday, at 11 A.M., Demonstrations on the Diagnosis and Treatment of the Acute Infectious Diseases will be given by Dr. Frederic Thomson.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.
POST-GRADUATE COURSE: FEB.–MARCH, 1925.
CLINICAL LECTURES AND DEMONSTRATIONS.
MONDAY, March 2nd.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Chorea: Dr. Kinnier Wilson.
TUESDAY, March 3rd.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Pathology of Cerebral Tumours: Dr. J. G. Greenfield.
THURSDAY, March 5th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Radiology in the Diagnosis and Treatment of Nervous Diseases: Dr. Russell Reynolds.
FRIDAY, March 6th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Surgical Treatment of Spastic Conditions: Mr. Percy Sargent.
COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.
THURSDAY, March 5th.—12 noon, The Neuron: Dr. J. G. Greenfield.
COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.
MONDAY, March 2nd.—12 noon, Cerebellum: Dr. Hinds Howell.
The Fee for this Course will be £2 2s.
Dr. H. J. MacBride will give a COURSE OF EIGHT CLINICAL DEMONSTRATIONS, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays, if sufficient entries are received. The Fee for this Course will be £2 2s.
COURSE OF LECTURES AND DEMONSTRATIONS ON THE NEUROLOGY OF THE EYES.
WEDNESDAY, March 4th.—3.30 P.M., The Oculomotor Nerves: Mr. Leslie Paton.
Applications for this Course should be made early. Fee £5 5s. if taken as a separate Course, or £3 3s. if taken with the General Course.
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.
Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.
J. G. GREENFIELD, Dean of Medical School.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
TUESDAY, March 3rd.—4.30 P.M., Dr. J. Browning Alexander: Modern Views on the Treatment of Diabetes.
FRIDAY.—4.30 P.M., Mr. W. Ibbotson: Nasal Catarrh: A General Discussion.
Daily, In-patient and Out-patient Cliniques, Operations, Cliniques in Special Departments, &c.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, March 5th.—4 P.M., Dr. Still: Some Hæmorrhagic Affections in Childhood.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL POST-GRADUATE LECTURES, Marylebone-road, N.W.
THURSDAY, March 5th.—5 P.M., Mr. L. G. Phillips: Some Common Obstetric Difficulties.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
TUESDAY, March 3rd.—5 P.M., Dr. Wilfrid Fox: Nævi.
THURSDAY.—5 P.M., Dr. H. G. Adamson: Benign Growths of the Skin.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, March 2nd.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards. 2 P.M., Dr. Scott Pinchin: Medical Out-patients.
TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.
WEDNESDAY.—11 A.M., Medical Registrar: Medical Wards. 12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Owen: Medical Out-patients.
THURSDAY.—11 A.M., Sir Henry Simson: Gynæcological Wards. 12 noon, Mr. Sinclair: Abdominal Surgery (Lecture). 2 P.M., Mr. Bishop Harman: Eye Dept.
FRIDAY.—10.30 A.M., Dr. Dowling: Skin Dept. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose and Ear.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION, 11, Chandos-street, Cavendish-square, W.
FRIDAY, March 6th.—4.30 P.M., Dr. E. W. Goodall and Dr. G. E. Friend: A Discussion on the Differential Diagnosis of Scarlet Fever, Rubella, and Measles and Allied Rashes.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)
MONDAY, March 2nd.—(At the Children's Hospital.) Mr. Morrison: Surgical Diseases of the Kidneys in Childhood.
TUESDAY.—(At the Southern Hospital.) Mr. W. R. Williams: The Treatment of Whitlows.
WEDNESDAY.—(At the Northern Hospital.) Dr. Pemberton: Subinfections.
THURSDAY.—(At the Stanley Hospital.) Miss R. Nicholson: Ovarian Tumours.

MANCHESTER MEDICAL SOCIETY.
THURSDAY, March 5th.—4 P.M., Joint Meeting with the Liverpool Medical Institution, at Liverpool. Prof. A. Ramsbottom: Dizzy Attacks. Mr. J. B. Macalpine: Vesical Papilloma. Dr. H. Platt: Considerations on Loose Bodies in Joints.

ANCOATS HOSPITAL.
THURSDAY, March 5th.—4.30 P.M., Dr. Norman Kletz: Dyspepsia.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, March 3rd.—4.15 P.M., Dr. T. H. Oliver: Practical Points in Diabetes.

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE (at Whitworth-street West Branch).
FRIDAY, March 6th.—4.30 P.M., Dr. D. Dougal: Displacements of the Uterus in Relation to Pregnancy and Labour.

ST. ANDREWS INSTITUTE FOR CLINICAL RESEARCH
TUESDAY, March 3rd.—4 P.M., Dr. C. E. Douglas: Albuminuria and Pregnancy. Discussion.

THE PEOPLE'S LEAGUE OF HEALTH.
Lectures on What We Should Eat and Why, at the Medical Society of London, 11, Chandos-street, W.
TUESDAY, March 3rd.—6 P.M., Prof. R. H. A. Plimmer: Common Errors in Diet.

Appointments.

BYRD, C. B., L.R.C.P. Lond., M.R.C.S., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Patterdale District of the County of Westmorland.

SHAW, WILLIAM FLETCHER, M.D. Manch., appointed to the Chair of Obstetrics and Gynæcology in the University of Manchester.

Cheltenham General Hospital: LIDDERDALE, F. J., M.B., B.S. Durh., D.P.H., Hon. Physician; DAVEY, J. B., M.B., M.R.C.S., L.R.C.P., D.T.M., Hon. Pathologist.

St. Paul's Hospital for Skin and Genito-Urinary Diseases: WALKER, KENNETH, F.R.C.S. Eng., Honorary Surgeon; EVANS, Sir THOMAS J. CAREY, F.R.C.S. Eng., and WINSBURY WHITE, H. P., F.R.C.S. Eng., Honorary Assistant Surgeons.

Vacancies.

For further information refer to the advertisement columns.

Barnet, Wellhouse Hospital.—Asst. R.M.O. £150.

British Hospital for Mental Disorders, &c., 72, Camden-road, N.W.—Hon. P.

Cambridge, Addenbrooke's Hospital.—H.S. at rate of £130.

Cardiff, Welsh National School of Medicine.—Asst. Lecturer in Dept. of Physiology. £400.

Derbyshire County Council.—M.O.H., &c. £1400.

Ealing Borough.—Asst. M.O.H. £600.

Federated Malay States.—Research Studentship in Tropical Medicine. £700.

Grimsby, County Borough Education Committee.—Dental S. £500.

Hospital for Sick Children, Great Ormond-street, W.C.—Surg. Reg. £300.
Inverness, Northern Infirmary.—Jun. M.O. £100.
King's College Hospital, Denmark Hill, S.E.—Jun. Obstet. and Gynæcol. S.
Liverpool Open-air Hospital for Children, Leasowe, for Non-Pulmonary Tuberculosis.—Jun. M.O. £200.
London Temperance Hospital, Hampstead-road, N.W.—Dermatologist.
Manchester, Ancoats Hospital.—Res. M.O. and Pathological Reg. at rate of £175 and £100 respectively.
Manchester, Christie Hospital.—Cancer Research Worker. £500.
Manchester, Hulme Dispensary, Dale-street.—Hon. S.
Manchester, Salford Royal Hospital.—H.S. and Cas. H.S. Each at rate of £125.
Metropolitan Asylums Board, Infectious Hospitals Service.—Asst. M.O.'s. £500.
Metropolitan Hospital, Kingsland-road, E.—Hon. Anæsthetist.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Asst. Ophth. S.
Nottingham General Hospital.—Pathologist. £350 and private fees allowed.
Oldham Royal Infirmary.—H.S. a rate of £200.
Prince of Wales's General Hospital, Tottenham, N.—Hon. Anæsthetist. £20.
Royal Chest Hospital, City-road, E.C.—Phys. Also Hon. Radiologist.
Royal Dental Hospital of London, Leicester-square, W.C.—Asst. Dent. S.
Royal Northern Hospital, Holloway, N.—M.O. to Out-patient Dept. at rate of £125. H.S. at rate of £75. Also Asst. Radiologist. £150.
St. Mary's Hospital Institute of Pathology and Research, Paddington, W.—Research Studentship at rate of £200.
St. Pancras Metropolitan Borough.—M.O.'s Infant Consultations. 1½ guineas per consultation.
St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—H.S. at rate of £75.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—S. to In-patients and S. to Out-patients.
Sheffield Royal Hospital.—Hon. Radiologist.
Southampton County Borough.—Asst. M.O.H. £600.
Stockport County Borough.—Asst. Med. Off. Health. £600.
Sudan Medical Service.—Two Med. Inspectors. £E.720.
Sutton, Surrey, The Downs Hospital for Children.—Jun. Asst. M.O. £500.
University College Hospital, Gower-street, W.C.—Obstet. Phys.
West London Hospital, Hammersmith-road, W.—H.P. and 2 H.S.'s. Each at rate of £100.
West Riding County Council.—Dist. Tuberculosis O. £600.
Willesden General Hospital, Harlesden-road, N.W.—Temp. Asst. Hon. Radiologist.

Births, Marriages, and Deaths.

BIRTHS.

CREASY.—On Feb. 17th, at Devonshire-place, W., the wife of Dr. Rolf Creasy, junr., of a daughter.
GRANT.—On Feb. 11th, at Sidney House, Shrewsbury, the wife of W. J. Grant, M.D., F.R.C.S., of a son.
MACDONNELL.—On Feb. 19th, at 89, Lower Baggot-street, Dublin (Nursing Home), the wife of J. J. MacDonnell, M.B., of a daughter.
MATTHEW.—On Feb. 15th, at Redgarth, Dundee, the wife of Dr. David Matthew, of a son.

MARRIAGES.

LOCK—PUNNETT.—On Feb. 18th, at Holy Trinity Church, Tunbridge Wells, Percy Gonville Lock, M.A. Camb., M.R.C.S., L.R.C.P., to Clare, widow of Edward John Punnett, of Tonbridge.
READER—HARMER.—On Feb. 14th, at Bickley, Kent, N. L. M. Reader, M.S., F.R.C.S., to Mabel Kathleen, daughter of Mr. and Mrs. P. J. Harmer, of Cotswold, Bickley, Kent.

DEATHS.

ALLBUTT.—On Feb. 22nd, suddenly, at S. Radegund's, Cambridge, the Rt. Hon. Sir Thomas Clifford Allbutt, K.C.B., M.D., Regius Professor of Physic in the University of Cambridge, in his 89th year.
CUTHBERTSON.—On Feb. 15th, at Bexley, Captain John Oswald Cuthbertson, R.A.M.C., M.B., B.A., in his 54th year.
HACKETT.—On Feb. 15th, at Ocala, Eldorado-road, Cheltenham, Colonel R. I. D. Hackett, C.B.E., M.A., M.D., late Army Medical Service.
MARTIN.—On Feb. 19th, at "Strangford," Church-road, Ashford, Kent, Albert Edmund Samuel Martin, F.R.C.S. (Ireland), aged 41.
MORRELL.—On Feb. 19th, suddenly, at Sheffield, Reginald Arthur Morrell, M.R.C.S., aged 39.
SIMONS.—On Feb. 15th, at Bath, Lieut.-Colonel Robert J. Simons, R.A.M.C., of Corsham, Wilts., in his 59th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

GERMAN HOSPITAL, DALSTON.—The annual report shows that the number of in-patients treated last year was 1971, including 200 accident cases, nearly all of which were English. The system of patients' contributions has become a stabilising financial factor, and is expected normally to produce between £7000 and £8000 a year.

Parliamentary Intelligence.

HOUSE OF COMMONS.

TUESDAY, FEB. 17TH.

Silicosis and Workmen's Compensation.

Mr. CECIL WILSON asked the Home Secretary whether, in view of the serious effect of silicosis on the curtailment of life in persons engaged in grinding trades, he could see his way to the introduction of a Bill amending the Workmen's Compensation (Silicosis) Act, 1918, so as to cover disablement due to silicosis or silicosis accompanied by tuberculosis in the grinding trades.—Sir WILLIAM JOYNSON-HICKS replied: The Act of 1918 empowers the Secretary of State to make a scheme for the payment of compensation in any industry or group of industries involving exposure to silica dust. No further legislation therefore is necessary. The question of a scheme for the grinding trades has been referred for advice to the Departmental Committee on Compensation for Silicosis, and further action must depend on the Committee's report.

Labelling of Manufactured Foods.

Sir WILFRID SUGDEN asked the Minister of Health if he would give facilities for the introduction of legislation requiring manufactured food to be labelled with full details of its contents and ingredients.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: Any legislation which may be introduced on these lines would have my right hon. friend's careful consideration, but he is afraid it is not likely that any special facilities could be given in this connexion.

Increase in Population.

Mr. HERBERT WILLIAMS asked the Minister of Health if he would state the total estimated increase in population from the armistice up to December, 1924; the total number of houses completed in that period; and the number demolished during the same period.—Sir KINGSLEY WOOD replied: The total estimated increase in the population of England and Wales from the armistice up to December, 1924, is 1,402,000. In connexion with State-assisted schemes 263,396 houses have been completed during this period. Complete information as the number of houses erected without State assistance is not available, but during the two years for which figures are available—viz., to Sept. 30th last—some 126,000 houses were built by private enterprise without State aid. My right hon. friend has no information as to the total number of houses demolished during the period, but according to reports of medical officers of health for the year 1920 to 1923 inclusive action by local authorities under Section 18 of the Housing, Town Planning, &c., Act, 1909, resulted in the demolition of 2568 houses.

WEDNESDAY, FEB. 18TH.

Industrial Accidents in 1924.

Lord HENRY CAVENDISH-BENTINCK asked the Home Secretary the total number of industrial accidents for 1924; and the number of fatal industrial accidents for the same period.—Sir W. JOYNSON-HICKS replied: The total number of accidents reported under the Factory and Workshops Acts in 1924 was 169,726, of which 953 were fatal. These figures are provisional only and may be subject to slight correction. I regret that I am unable to give the figures of accidents in industries not covered by the Factory Acts.

Mentally and Physically Defective School Children.

Colonel DAY asked the President of the Board of Education what was the number of mentally deficient and the number of physically defective children in public elementary schools and the number in each group for whom provision was made in special schools.—Lord E. PERCY replied: According to the returns from local education authorities for 1923, it would appear that there are, in England and Wales, about 30,000 educable mentally defective children and about 106,000 physically defective children, among whom are included about 49,000 classed as "delicate," and that of these children about 11,000 mentally defective and about 67,000 physically defective children (including about 36,500 children classified as "delicate") are attending public elementary schools. At the present time there is accommodation in special schools for 16,565 mentally defective children and for 16,608 physically defective children. For full details I would refer the hon. and gallant member to Section VI. of the report of the Board's chief medical officer for 1923.

Demolition of Slum and Insanitary Areas.

Captain GARRO-JONES asked the Minister of Health whether he was aware that the chief obstacle to the demolition of slum and insanitary areas was now the lack of alternative

accommodation; and whether he would cause a survey of such possible accommodation to be commenced at once and give instructions that the survey should encompass not only vacant houses of all types, but also houses used as workshops and unoccupied institutions, as, for example, the casual ward of the Hackney Union.—Mr. NEVILLE CHAMBERLAIN replied: Schemes for the clearance of insanitary areas provide for the building of alternative accommodation for the re-housing of the occupants who will be displaced. Local authorities have power to acquire and adapt existing property, but the adaptation of existing buildings has usually been found to be costly and unsatisfactory, and I do not think that the advantages of a survey, such as is suggested, would be commensurate with the cost of making it.

Vaccination Exemptions in 1923.

Mr. SAVERY asked the Minister of Health the number of children on behalf of whom exemption from vaccination was claimed during the year 1924; and how many of those claims were allowed.—Mr. NEVILLE CHAMBERLAIN replied: The last year for which particulars are at present available is 1923. During that year statutory declarations of conscientious objections to vaccination were received by vaccination officers in respect of 284,551 children. I have no information as to the number, if any, of statutory declarations which were not accepted because they did not omply with the statute or were otherwise invalid.

Tuberculosis Order, 1914.

Sir FRANCIS WATSON asked the Minister of Agriculture whether it was intended to reintroduce the Tuberculosis Order of 1914 with regard to cattle, which sought to eliminate certain classes of diseased animals from a herd.—Mr. WOOD replied: This matter is now under the consideration of the Government and I hope to be in a position to make a statement at an early date.

Public Health Acts Amendment Bill.

Mr. ROBERT WILSON asked the Minister of Health if he proposed to introduce a Public Health Acts Amendment Bill on the lines of the Amendment Acts of 1890 and 1907, embodying provisions which had been passed in private Acts by the Local Legislation Committee of the House of Commons.—Mr. NEVILLE CHAMBERLAIN replied: I hope to be able to introduce such a Bill, but I cannot say whether it will be possible to introduce it this session.

Poor-law Medical Officers' Salaries.

Mr. WARNE asked the Minister of Health the number of Poor-law medical officers and the cost of salaries per annum; and the number of deaths in workhouses and the bodies removed for medical and dissection purposes in the years 1914 and 1923.—Mr. NEVILLE CHAMBERLAIN replied: Information giving the number of Poor-law medical officers is not available, nor is separate information as to their salaries. The approximate total remuneration of Poor-law medical officers, dispensers, and nurses in the year 1922–23 was £1,900,000. 59,524 deaths occurred in Poor-law institution in 1914, 60,911 such deaths in 1923. The number of bodies removed to medical schools in England and Wales for the purpose of anatomical examination and operative surgery was in 1914, 301, and in 1923, 388.

Assistance to Crippled Children.

Sir CHARLES CAYZER asked the Minister of Health what provision, if any, was made by the State for assistance in any way to crippled children.—Mr. NEVILLE CHAMBERLAIN replied: Grants are available from the Exchequer towards expenditure incurred by local authorities for the treatment and after-care of crippled children in accordance with arrangements approved by the responsible department of State, which may be either the Board of Education or the Ministry of Health.

TUESDAY, FEB. 24TH.

Royal Commission on National Insurance.

Mr. HAYDAY asked the Prime Minister whether he was prepared to recommend the extension of the terms of reference of the Royal Commission on National Health Insurance.—Mr. BALDWIN replied: No Sir, it is not proposed to extend the terms of reference of a commission constituted to deal with the particular question of National Health Insurance.

CHILD WELFARE.—The annual general meeting of the National League for Health, Maternity and Child Welfare, and of the National Association for the Prevention of Infant Mortality will be held at Carnegie House, 117, Piccadilly, London, W.1, to-day (Friday), Feb. 27th, at 3 P.M., when Lieut.-Colonel F. E. Fremantle, M.P., will give an address on Parliament and the Public Health. Dr. Amand Routh will be in the chair.

Notes, Comments, and Abstracts.

NUTRITION.

By J. V. A. SIMPSON, M.D. LOND., D.P.H. CAMB.,
DEPUTY MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER, TORQUAY.

IN attempting to outline what is meant by the term "nutrition" it is at once seen that there is great difficulty of exact statement, for nutrition is a complex process. With reference to the use of the Dunfermline scale, Dr. Alister Mackenzie wrote that in judging and classifying nutrition "the general appearance of the child, the condition of the skin and subcutaneous tissues, the muscular tone and development, the state of the mucous membranes, the vigour or listlessness which may appear in the child's facial expression, carriage, movements, voice, interest, all contribute to our decision."[1] And Sir George Newman said: "Sound nutrition is a general physiological condition which connotes a healthy body in all respects and the good tone and health of its various constituent parts . . . . . In regard to diagnosis, therefore, the school medical officer has as yet neither an absolute standard of nutrition nor a single criterion to guide him. He must form a considered and careful opinion on all the facts before him."[2]

Nevertheless doctors differ, and the personal element must necessarily be a powerful influence in much of the practice of medicine. In certain laboratory tests, in face of definite clinical physical signs, there can be little dispute over the findings and the interpretation of the results, but on such a question as nutrition a variety of conflicting opinions are frequently obtained, even from expert clinicians. Therefore the search for a practical yet simple index of physical fitness has been given much emphasis during the last few years; and progress has taken place mainly along three lines. In the first case the idea of using the Dunfermline scale has been adopted; in this the child is placed in one of four groups: (1) "Excellent" means the nutrition of a healthy child of good social standing; (2) children whose nutrition just falls short of standard 1 are in this group; (3) children "requiring supervision" and are on the borderline of serious impairment constitute this group; (4) children "requiring medical treatment" are those whose nutrition is seriously impaired. This has many advantages, one of which is that whereas the usual "good," "fair," "poor" headings may cause the inspector to place all doubtful cases in the middle group, a fourfold division calls for more thought and generally receives it. Although no considerable progress has been made in developing a scale along these lines, the possibilities have probably not yet been fully explored.

The second method consisted in the use of a single physical characteristic as a measure of fitness, that almost exclusively used being weight; and in employing this criterion, it is essential that a certain amount of deviation from the average be allowed, because this actually occurs among healthy individuals. The limits of this "zone" are not easily made and appear to have been based upon opinion rather than upon investigation, and it has certainly been demonstrated quite clearly "that even for healthy children the variability in weight differs in a marked degree according to sex and age, and it would appear necessary to delimit normal variations for each sex, age, and other groups."[3] The third method is to employ variations in more than one physical characteristic, such as weight, sitting height, chest circumference, and vital (lung) capacity; of these the most elaborate is that of Dreyer,[4] and the possible advances in this direction would appear to be numerous. This method and that of Flack are extremely valuable, and in the annual report (1923) of the school medical officer, Manchester, there is a section dealing with important results in secondary school boys with modifications of these methods. Of other methods the "Pedihsi" factor[4] of Pirquet has been used, and the standard of Wood[4] has received wide application in America, where his table has been employed in routine school work.

Excluding the more detailed methods, for these perhaps are not always easily applicable to very young children, the results of several investigations into the reliability of the indices are now available; primarily it would appear that there is no simple gauge of nutrition.[7 8 9] Failing a complete physical examination, however, all the children who are 7 per cent. underweight for height, age, and sex may be regarded as undernourished.[10] Although such standards cannot diagnose disease, and are only to be subsidiary to complete clinical examination, yet it has been shown that this method seems worthy of use; even if no complete clinical picture of the child's physical condition is given by it, yet "the relation of weight to height and age is the best single index of general health and nutrition

as well as the best criterion of normal growth that we possess."[11]

The Results of Tests in an Open-air School.

With this in view, and bearing in mind the fact that no measurements other than weight and height were available, it was decided to test the Baldwin-Wood tables and a standard in connexion with the children in the open-air school at Torquay. This investigation involves the records of 148 children extending over a period of about 4½ years; and as the annual reports of the Board of Education recommend six months as a minimum period of stay at an open-air school, any children who were at this school for a less period have been excluded from this survey. Of the 148, about a third are still at the school, but these are included because they have been there for more than six months. The findings should show how far this standard judges malnourished children, for the majority were admitted for malnutrition, anæmia, or allied condition; further, it should be possible to test the results of the school itself, for the application of the *same* standard to the children as they enter and as they leave the school is a method freed from personal bias. Thus the ratio of cases classed as malnourished before and after treatment at this school will have a significance, the value of which must be admitted as quite definite. In addition, it is possible to find out from these tables the average annual increase of growth for age, sex, and height, and consequently the expected increase can be compared with that actually obtained; this is most valuable, for of greater importance than the weight or height at any given age is the annual increment of growth.

Applying the Baldwin-Wood method to the 148 children, and counting as malnourished all below 7 per cent. of the standard weight for age, sex, and height, results were obtained as shown in Table I.:—

TABLE I.

—	On entering the school.			On leaving the school.		
	Normal	Malnourished.	Percentage malnourished.	Normal	Malnourished.	Percentage malnourished.
Boys ..	40	37	48·0	64	12	15·6
Girls ..	26	45	63·8	52	20	28·6
Total ..	66	82	55·4	116	32	21·6

The average time spent at the school is given in Table II.:—

TABLE II.

—	Normal.	Malnourished becoming normal.	Malnourished remaining malnourished.
Boys ..	1·6 years	1·8 years	2·2 years
Girls ..	1·7 ,,	1·7 ,,	1·6 ,,

From this it is seen that there is a greater percentage of girls than boys malnourished, in spite of the fact that usually there are slightly more boys than girls at the school. Whether or not this is a mere chance selection it is scarcely possible to say. If it is not, then, although the medical officer drafts more boys than girls to the school, this standard would judge a greater proportion of girls as suffering from malnutrition; this might possibly be due to the greater height of girls at some ages. Approximately just over half the children admitted are below this standard; and it is difficult to say if this standard of malnutrition is correct, for while the majority are admitted for debility, malnutrition, anæmia, and allied conditions, yet a number (in this series approximately 15 per cent.) were admitted as contacts of tuberculous cases, or as children with heart disease, chorea, old infantile paralysis—conditions which would not clinically be called malnourished. The children have been admitted during the four years by no less than three different medical officers, which should equalise the personal factor of selection, and so it would appear that this standard just fails to class as malnourished a definite percentage (in this series about 30 per cent.) of the children. This agrees partly with the American findings,[9] although there it was found that many more children clinically suffering from malnutrition are missed—it was thought that about two-thirds of the malnourished escape with this standard.

As judging the work of the open-air school the standard is distinctly useful and shows very good results; for whereas 1 out of every 2 children was definitely below the limit on admission, only 1 out of 5 is below when leaving. And this would probably show an even better result had it not been for the fact that quite an appreciable number, classed as malnourished on leaving, have left for a special reason—school-leaving age, leaving the district, admission to other institutions. And in addition to this some of the malnourished are among those still in the school who, as explained, are included in this series, and they will doubtless pass the limit in course of time.

The Cases Analysed.

A further analysis of the cases is of great interest; other investigators have shown that the children under the limit are usually taller for their ages than were those in more normal condition of weight.[12] The paucity of data in these figures did not permit an analysis by sex and age for this purpose; but it was shown that the children who remained malnourished tended to put on more height than either those malnourished cases becoming normal, or the normal group. To make any comparison feasible, two year groups were taken together and the average annual increase in height worked out. The results were as given in Table III.

TABLE III.—*Average Increase in Height per Year.*

—	Ages.	*Group 1.* Malnourished remaining malnourished.	*Group 2.* Malnourished becoming normal.	*Group 3.* Normal.
		Inches.	Inches.	Inches.
Boys ..	6–7	2·4	1·7	1·8
	8–9	1·9	1·6	1·8
Girls ..	8–9	2·0	1·8	1·8
	10–11	1·9	1·7	1·8

Group 1 in Table III. make rather more than the average increase in height and this agrees with other investigations,[12] so that it would appear that there has been a retardation in height as well as in weight, and that as soon as favourable circumstances permit there is not only an improvement in weight, but a definite and greater than average increase in height. One of the problems met by the nutrition worker and noted by W. R. P. Emerson is the fact that as fast as children who are underweight make gains in weight, their height increases as well and the new height calls for additional weight.

According to age, sex, and height, the average annual gain in weight can be obtained from the Baldwin-Wood tables, and this expected average gain for the whole period of stay at the school has been worked out for each child individually in the Torquay series. On comparison with the actual gain during the same time, figures were obtained as given in Table IV.

TABLE IV.—*Average Gains in Weight (in Pounds).*

—	*Group 1.* Malnourished remaining malnourished.		*Group 2.* Malnourished becoming normal.		*Group 3.* Normal.	
	Expected gain.	Actual gain.	Expected gain.	Actual gain.	Expected gain.	Actual gain.
Boys ..	14	13½	10	12½	8½	10½
Girls ..	12½	12	12	16	9½	13

It is seen that the children remaining malnourished gain approximately as much as the average expected increase in weight (although they have put on more than the average in height), but the other groups gain considerably more than the expected addition of weight (and they only gain the average in height). So while the gain in weight in Group 1 is not sufficient to bring the children above the malnutrition standard, yet in the other two groups the increase is quite adequate, even taking into account the fact that the extra height automatically demands a higher standard of weight in the Baldwin-Wood scale. In other words, it is frequently found that the advance in weight sufficient to bring children up into the safety zone is accompanied by more than the expected increase in height for the same period. A prominent investigator recently made the dictum that if the inches are looked after, the pounds will look after themselves; but it is better to consider both, the one in relation to the other, for obviously it is evident that a number of children have at the start more inches than they are able to sustain by pounds.

Conclusion.

This investigation can be criticised on several grounds; paucity of data is apparent, especially when considering averages, and the division into age- and sex-groups, and an American scale has been used on English children. But it shows that further investigations on these weight-height-age tables may possibly be profitable in exploring the wide

field of nutrition and malnutrition, especially with the object of obtaining uniformity of classification as far as possible. The weight-height ratio is important to the extent that the mortality experience of insurance companies indicates definitely significant facts in this connexion; at younger ages a limited amount of overweight appears an advantage, associated with more favourable mortality records. According to the report of the Joint Committee of the Actuarial Society of America and the Association of Life Insurance Medical Directors (New York, 1922), underweight for height is a serious impairment in early adult life. Persons 30 per cent. underweight have a 50 per cent. excess mortality at these early ages. It would seem that the records of insurance companies indicate that there is an optimum weight—that is, a weight-height ratio in relation to age that is associated with the most favourable mortality experience—and that this optimum weight, or best build, is not the average. Such, then, indicates the obvious importance of this ratio. And, further, any such standard is to be desired not only as a help to ascertain all cases of unsatisfactory nutrition, but also to assess and check the available methods of dealing with this defect. In connexion with the results in this survey, the findings may certainly claim to show something of the improvement brought about in malnourished children by continuous open-air school work; for although it is only a day school in Torquay, yet it has been carried on winter and summer alike through the whole period, and no heating at all has been required in the class rooms or rest sheds—probably due to the mild equable climate. And the method of assessment is independent of the personal factor present to some extent in clinical work.

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BLACKBURN'S HEALTH WEEK.

THE corporation of Blackburn some time ago set up a "Publicity Committee on Health," and as part of the outcome of its activities a health exhibition lasting for 10 days was opened on Feb. 11th, the object being to educate the citizens, so that, in the words of the Mayor, they might, by their own efforts and knowledge, avoid sickness and disease, and thus help to secure for every child born in Blackburn a birthright of mental and bodily health. The public are asked to recognise that health is not merely the avoidance of disease, but a positive condition of the body to be brought about and maintained by the observance of proper rules of living. The exhibition was entirely educational and the commercial element was intentionally excluded. The importance of fresh air, sunshine, and of good and proper feeding inspired the salient exhibits, which were organised by the Central Council for Infant and Child Welfare. The corporation of Glasgow sent exhibits to show the value and importance of fresh air, and the gas, electricity, cleansing, and other departments of the Blackburn Health Department also lent exhibits. Special efforts were made to instruct visitors on the importance of pure milk. From the exhibition handbook we learn that Blackburn has had for many years special powers for preventing the sale of tuberculous milk, the veterinary surgeon being empowered to visit farms from which such milk is being sent to the borough. Blackburn's gross expenditure by the health committee—less income from Government grants—is £16,805, which works out at a net charge per head of the population of 2*s.* 7½*d.* and the net charge on Blackburn ratepayers expressed as a penny rate is 5·9 pence—an extremely moderate rate. During the 10 days the exhibition was open daily short lectures were given on health topics; the town's maternity home, welfare and school clinics were open for inspection; and "Health Sermons" were preached on Sunday at most churches and chapels in the town.

THE COST OF SCIENTIFIC PUBLICATIONS.

IT has been decided by the Treasury, as a result of representations from the National Union of Scientific Workers, to provide in the 1925–26 estimates for an increase in the grant to the Royal Society towards the cost of scientific publications from £1000 to £2500. It is not intended that the Royal Society should spend the grant on its own publications, but that it should administer it for the benefit of subsidiary societies—such as the biochemical, the chemical, and the geological societies—which are hard put to it to find money for making known the results of their research work. It is pointed out in the current issue of the *Scientific Worker* that, with an additional £1500 available, the Royal Society may be in a position to consider more applications from individual research workers for assistance to enable their results to be published.

PUBLIC HEALTH IN BASUTOLAND.

Mr. E. G. Dutton, Acting Government Secretary, in his report for 1923 states that treatment at the Government dispensaries was given to 48,318 patients during the year. In the hospitals 2377 patients were treated. The number of surgical operations performed was 2133. The general health of the territory was good, and, with the exception of typhus fever and small-pox, there were no serious epidemic diseases; 68 cases of measles, 49 of chicken-pox, 9 of diphtheria, 111 of whooping-cough, and 22 of enteric fever were reported, all more or less sporadic. No case of scarlatina was recorded. Typhus fever is still epidemic in all the districts in the territory; 958 cases were reported, with 120 deaths. This is a considerable increase over the previous year, due in part to the regulations regarding notification being more strictly observed. Propaganda as regards prevention has been carried out in various ways and assistance has been given by the native press. Small-pox of a mild type was epidemic during the year; 671 cases with 14 deaths were reported. Most of the cases occurred in the central districts of the country. This is a continuation of the epidemic reported in 1922. The following were notified during the year: influenza, 337 cases, no deaths; dysentery, 56 cases, 1 death; pneumonia, 106 cases, 2 deaths; cerebro-spinal meningitis, 8 cases, 1 death. Free treatment for syphilis continues to be given, and it is noted that many are availing themselves of the privilege. Venereal disease is accountable for much ill-health and disablement in spite of the efforts of the medical officers to instruct in the way of clean living and personal hygiene. The Leper Settlement continues to do good and useful work. The inmates at the end of 1923 were 213 males and 254 females. There were 66 admissions, 5 readmissions, 42 deaths, 10 desertions, and 31 discharges during the year. The various forms of treatment are being vigorously pushed with much success, and a considerable number await discharge in the near future. There has been a marked fall in the death-rate in the asylum, which may be attributed partly to the intensive modern treatment now given and partly to the more favourable early-stage condition of the patients now being admitted. The employment of the more able-bodied lepers in useful and remunerative work contributes much to their happiness and health. The men get 1 acre of land and the women ½ acre to cultivate, the produce of which is bought by the Government. Two large solaria have been built for the treatment of both sexes by graduated exposure to sunlight. The farm produced good crops during the season and there has been an amply supply of milk, together with potatoes, fruit, and vegetables to supplement the dietary. These have gone a long way to improve the general health of the patients. Basutoland, a native territory in South Africa, is bounded on the west by the Orange Free State, on the north by the Orange Free State and Natal, on the east by Natal and East Griqualand, and on the south by the Cape Province. Its area is 11,716 square miles. The altitude varies from 5000 feet to 11,000 feet above sea-level, and the climate is, on the whole, healthy. The census of 1921 showed 495,937 natives and 1603 whites, besides 1069 coloured and 172 Asiatics.

INDEX TO "THE LANCET," VOL. II., 1924.

THE Index and Title-page to Vol. II., 1924, which was completed with the issue of Dec. 27th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.